IDA

INSTITUTE FOR DEFENSE ANALYSES

The 1996 IDA Cost Research Symposium

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PREFACE

This document was prepared by the Cost Analysis and Research Division of the Institute for Defense Analyses (IDA) as part of a project that is jointly sponsored by IDA's Independent Research Program and the Office of the Director, Program Analysis and Evaluation, in the Office of the Secretary of Defense (OSD). The document contains summaries of ongoing cost research tasks at selected government offices, Federally Funded Research and Development Centers, and Military Universities. These projects were discussed at a meeting held at IDA on 23 May 1996.

The purpose of the document is to make available the material it contains for the use and convenience of those who participated in the meeting, and for other purposes deemed appropriate by the Chairman, OSD Cost Analysis Improvement Group. The material has not been evaluated, analyzed, or subjected to formal IDA review.

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TABLES

A. INTRODUCTION

On 23 May 1996, representatives from selected offices and organizations that sponsor and conduct defense cost research met at a symposium at the Institute for Defense Analyses (IDA) to discuss and exchange information on their current research programs. The symposium was jointly sponsored by IDA and the Cost Analysis Improvement Group (CAIG) in the Office of the Secretary of Defense (OSD). Before the meeting, the representatives were asked to prepare summaries of each cost research study in progress or planned at their offices and organizations. This document catalogs those summaries.

B. BACKGROUND

Several Department of Defense (DoD) offices conduct and sponsor research into methods for estimating and monitoring the costs of defense systems and forces. Such efforts improve the technical capabilities of the DoD to forecast future costs in support of planning, programming, budgeting, and acquisition decisions. The CAIG leads the department in improving capabilities in the cost area. IDA supports the CAIG and other offices in these efforts. One example of such support was IDA's initiation in 1989 of an annual defense cost research symposium. This symposium facilitates the exchange of research findings, leads to avoidance of costly duplication of effort, and allows for more informed and coordinated cost research planning among the DoD offices, Federally Funded Research and Development Centers (FFRDCs), and Military Universities that independently sponsor cost research.

The charter of the CAIG [1] requires an annual review of the plans of all DoD Components for performing or sponsoring cost research. It also requires development of a six-year plan for DoD cost research that allocates resources to the highest priority, avoids duplication of effort, and facilitates sharing of results among the DoD Components. Further, the CAIG is to make available to all interested DoD Components a data base describing completed, ongoing, and planned cost research projects.

The 1996 IDA Cost Research Symposium helped the CAIG fulfill a portion of these responsibilities. During the symposium, the cost research activities of DoD Components were reviewed and arrangements were made among participants for the exchange of research findings, data, and reports. Each year, IDA produces a catalog of the ongoing cost research activities discussed at the symposium. (This document is an example; References [2 through 8] contain similar information from previous years' symposia.) These documents provide information that can be valuable to DoD

Components and FFRDCs when making research planning and resource allocation decisions.

C. ABOUT THE SYMPOSIUM

Representatives of IDA and the OSD CAIG jointly prepared the list of offices and organizations invited to participate in the 1996 symposium. Participation included preparation of research project summaries and attendance at the symposium. Table 1 lists the offices and organizations that accepted our invitation and the names of the individuals who represented them at this year's symposium. The abbreviations and ordering of the offices and organizations in Table 1 are used throughout this document.

Table 1. Participants in the 1996 IDA Cost Research Symposium

Office/Organization	Abbreviation	Representative
Office of the Director, Program Analysis and Evaluation	PA&E	Dr. David McNicol
Army Cost and Economic Analysis Center	CEAC	Mr. Richard Bishop
Naval Center for Cost Analysis	NCCA	Capt. John Fink
Air Force Cost Analysis Agency	AFCAA	Mr. John Dorsett
Army Materiel Command	AMCRM	Mr. Mary Ann Dominiak
Army Tank-Automotive and Armaments Command	ATAAC	Mr. Russell F. Feury
Army Space and Strategic Defense Command	SSDC	Ms. Carolyn S. Thompson
Army Aviation Troop Command	ATCOM	Mr. Mark Malone
Ballistic Missile Defense Organization	BMDO	Lt. Col. James Sierchio
Naval Air Systems Command	NAVAIR	Mr. Ronald J. Rosenthal
Naval Sea Systems Command	NAVSEA	Mr. Irvin M. Chewning
Air Force Material Command/Aeronautical Systems Center	ASC/FMC	Ms. Bert Pahren
Air Force Space and Missile Systems Center	AFSMC	Mr. David Hansen
Air Force Material Command/Human Systems Center	HSC/EMP	Ms. Betty West
Air Force Electronics Systems Center	ESC/FMC	Col. William Marsh
RAND Corporation	RAND	Mr. Fred Timson
Aerospace Corporation	Aerospace	Dr. Stephen Book
Air Force Institute of Technology	AFIT/LA	Dr. Roland D. Kankey
Defense Systems Management College	DSMC	Lt. Col. Ronald Phillips
Ministry of Defence, Directorate of Project Time and Cost Analysis	DPTCAn	Mr. Ron King
Center for Naval Analyses	CNA	Dr. Henry Eskew
MITRE Corporation	MITRE	Mr. James Ellenbogen
Logistics Management Institute	LMI	Mr. Walter Cooper
Institute for Defense Analyses	IDA	Dr. Stephen J. Balut

The one-day symposium was held in the spring to correspond with the CAIG's schedule for updating the DoD's Six-Year Cost Research Plan [9 and 10]. Budget decisions related to such studies are usually made during the summer. These decisions will be better informed because they will be made in light of the information disseminated at the symposium and contained in this document.

The agenda for the 1996 symposium differed substantially from that of previous years. The cost organizations of the Military Departments presented the status of the consolidated research programs of all participating activities in their respective Military Departments. These presentations highlighted research in key areas of the DoD Six-Year Cost Research Plan. Other presentations included a keynote address by the Chairman of the OSD CAIG, Dr. McNicol, four presentations on the timely subject of cost-risk analysis, and advice from Dr. Vance Gordon on updating the Six-Year Cost Research Plan. Speakers and their topics are listed in Table 2.

Table 2. Agenda

Welcome
Dr. Stephen J. Balut, *Institute for Defense Analyses*

Keynote Address
Dr. David McNicol, *Cost Analysis Improvement Group*

Status of Army Cost Research
Mr. Richard Bishop, *Army Cost and Economic Analysis Center*

Status of Navy Cost Research
Mr. Rick Collins, *Naval Center for Cost Analysis*

Status of Air Force Cost Research
Ms. Ranae Pepper, *Air Force Cost Analysis Agency*

Updating the Six-Year Cost Research Plan
Dr. Vance Gordon, *Cost Analysis Improvement Group*

Overview of Cost-Risk Analysis
Dr. Henry Eskew, *Center for Naval Analyses*

Role of Commercially Available Software in Cost-Risk Analysis
Dr. Steve Book, *Aerospace Corporation*

The RACM Model
Dr. Matthew Goldberg, *Institute for Defense Analyses*

Simulating Correlated Random Variables
Dr. Philip Lurie, *Institute for Defense Analyses*

D. USING THE CATALOG

This document was designed to facilitate a search for information on a specific topic. This is how the document's pertinent sections can be used:

- Table 3, Keyword Assignments. In the table, the rows represent keywords and the columns represent offices and organizations. The number at the intersection of a row and column is the number of studies by the office or organization (column) that have the keyword (row) associated with them.

- Appendix A, Study Titles. This appendix lists the study titles for tasks that are summarized in Appendix B. The titles, grouped according to the office or organization performing the study, appear in the order in which they were submitted to IDA.

- Appendix B, Summaries. This appendix is divided into sections, one for each office and organization that contributed project summaries.[1] The first part of each section describes the office or organization (name, location, director,[2] size, etc.).[3] Following that are summaries of research tasks the office or organization reported as being in progress or planned at the time of the symposium. Near the end of each summary is a list of keywords the director of the office or organization assigned to the task. (In several cases, the author modified the keywords for consistency.)

Finding tasks on a specific topic is accomplished as follows: (1) scan the appropriate row in Table 3 to identify the offices and organizations that are conducting studies on the topic; (2) scan the list of study titles for those offices and organizations in Appendix A; and (3) refer to the appropriate summaries in Appendix B.

E. HOW TASKS COMPARE TO THE PLAN

Some readers may be interested in how the tasks in this catalog align with the topics listed in the latest version of the Six-Year Cost Research Plan. Tables 4 and 5 have been included for this purpose. Table 4 lists the research categories first presented in January 1993 [9] and later modified by the Interim DoD Six-Year Cost Research Plan, FY 1994-99 [10]. The participating offices and organizations assigned the relevant numeral-letter-number codes from Table 4 to each of their tasks. Table 5 shows the number of projects in each category by office/organization.

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[1] Of the offices/organizations listed in Table 1, only the Army Aviation Troop Command did not submit summaries this year.

[2] Though their actual titles vary, the heads of the offices/organizations are referred to as "directors" in this document.

[3] This description is absent if the office/organization did not provide one.

Table 3. Keyword Assignments

	PA&E	CEAC	NCCA	AFCAA	AMCRM	ATAAC	SSDC	BMDO	NAVAIR	NAVSEA	ASC/FMC	AFSMC	HSC/EMP	ESC/RMP	RAND	Aerospace	AFIT/LA	DSMC	DPTCm	CNA	MITRE	LMI	IDA	Total
PERSPECTIVE																								
Industry	3	–	7	12	–	–	–	–	2	13	–	–	2	2	–	–	1	2	1	–	–	1	6	52
Government	17	8	53	76	3	1	3	13	21	25	3	5	2	2	4	7	10	3	2	2	1	3	32	296
CONTEXT																								
Estimating	8	8	34	67	1	1	3	12	19	21	3	5	2	2	2	5	8	2	–	2	2	4	15	226
Analysis	9	8	29	72	2	1	–	10	16	22	1	–	2	2	3	1	4	2	–	–	–	3	15	202
Reviewing/Monitoring	3	–	–	–	1	–	–	5	–	3	–	–	–	–	–	3	–	–	–	–	–	–	2	17
Policy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	3	–	–	–	–	–	2	8
Programming	5	–	1	1	2	–	–	–	–	–	–	–	–	–	–	3	–	–	–	–	1	3	11	27
Budgeting	1	1	1	–	2	–	–	1	–	–	–	–	–	–	2	2	–	–	–	–	1	3	3	17
OBJECT																								
Forces	7	2	–	–	–	–	–	2	–	1	–	–	2	–	2	–	–	–	–	–	–	–	12	28
Weapon Systems	3	2	16	7	1	–	–	2	6	1	3	–	2	2	2	–	5	–	–	–	–	3	–	55
Aircraft	2	1	6	20	–	–	–	–	11	1	–	–	–	–	2	–	–	–	–	–	–	–	6	49
Helicopters	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	1	–	–	–	–	–	3	6
Missiles	–	–	10	7	–	–	2	8	7	–	–	1	–	–	–	–	3	–	–	–	–	–	4	42
Ships	–	–	11	–	–	–	–	–	–	21	–	–	–	–	–	–	–	–	–	–	–	–	2	34
Land Vehicles	–	–	1	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	3
Space Systems	–	–	–	30	–	–	–	2	–	–	–	5	–	–	1	4	–	–	–	–	–	–	3	45
Airframe	–	–	–	3	–	–	–	1	1	–	–	–	–	–	–	–	1	–	–	–	–	–	1	7
Propulsion	2	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	4
Electronics/Avionics	2	2	13	12	–	–	–	4	1	1	–	–	–	1	–	–	–	–	–	–	1	–	2	39
Spares/Logistics	–	–	–	16	–	–	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	20
Facilities	2	–	–	–	–	–	–	4	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	7
Infrastructure	2	–	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	7	13
Manpower/Personnel	–	–	2	–	–	–	–	–	–	–	1	–	–	–	2	–	1	–	–	1	–	2	3	12
STAGE																								
Concept Development	2	–	2	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	2	8
Demonstration/Validation	2	–	2	1	–	–	–	–	1	–	–	–	–	–	2	–	1	–	–	–	–	–	2	11
EMD	5	–	19	6	–	–	–	6	7	1	3	3	–	–	2	1	4	–	–	–	2	–	8	67
Production	3	–	27	5	–	–	–	12	10	14	3	–	–	–	2	3	–	–	–	–	2	–	12	93
Test and Evaluation	2	–	1	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	7
Operations and Support	2	–	6	–	–	–	–	–	–	6	–	–	2	–	3	3	–	–	–	–	1	3	7	33
Retirement and Demilitarization	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–	–	3
Life Cycle	3	–	8	46	2	–	–	5	6	2	2	–	2	–	–	3	5	–	–	–	2	–	14	100
FOCUS																								
Labor	4	–	5	4	–	–	–	–	2	17	–	–	2	–	2	–	2	–	–	1	–	–	4	43
Material	5	–	4	4	1	–	–	–	2	17	–	–	2	–	–	–	–	–	–	–	–	–	4	39
Overhead/Indirect	3	–	4	3	1	–	–	–	2	14	–	–	2	–	–	–	–	–	–	–	–	–	4	33
Engineering	2	–	2	3	–	–	–	–	2	13	–	–	–	–	–	2	–	–	–	–	–	–	–	24
Manufacturing	1	2	2	–	–	–	2	6	3	10	–	–	–	–	–	2	2	–	–	–	1	–	4	35
CPR/CCDR	2	–	2	–	–	–	–	5	3	–	–	–	–	–	–	2	–	–	–	–	–	–	3	17
WBS	1	–	9	–	–	–	–	5	–	8	–	4	–	–	–	2	–	–	–	–	–	–	1	30

Table 3—Continued

FOCUS (continued)	PA&E	CEAC	NCCA	AFCAA	AMCRM	ATAAC	SSDC	BMDO	NAVAIR	NAVSEA	ASC/FMC	AFSMC	HSC/EMP	ESC/FMP	RAND	Aerospace	AFIT/LA	DSMC	DPTCAn	CNA	MITRE	LMI	IDA	Total
Fixed Costs								2	2													3	4	11
Variable Costs								2	2	1												3	5	12
Production Rate			1		1			1	1	2	1												2	5
Acquisition Strategy	4								2								1					1	9	26
Automation				8					2							4							6	16
Advanced Technology	1		6	4																1			1	10
Risk/Uncertainty	2			4		1			2	1	2				1	3	1	2					2	24
Training			1	1					1							1						2	1	6
Readiness				14						1													3	18
Reliability									1															1
Sustainability			4																				1	8
Integration			2	1														1					2	5
Modification			3	3					4							1								11
Security												1					1						1	2
Environment			1	1				2					2											8
Schedule	2		3				1																1	11
Size			1	4	2		1					2								1			3	8
APPROACH																								
Data Collection	5	3	37	61	1		3	12	21	15	1	4	2	2	2	5	5	1	1		1	4	12	198
Survey	1		4	2				2	5	3	2			1									3	23
Case Study	5		2	1	1					3	2					2		1					4	17
Mathematical Modeling	2		8	49				8		5	2	1	2					1	1			2	14	96
Economic Analysis								1		1													8	17
Cost/Production Function			1				1	3	2	5													4	14
Time Series			1																			1		1
Statistics/Regression	2		17	34	2		1	2	4	6		2	2		1	3	4	1		2	1	4	3	86
PRODUCT																								
Data Base	4	7	22	26				13	7	7	1	1	2		3	3							13	111
Review	2		1	2					14	2	1	2			2	1		1					5	14
Method	2		13	5	1	1		9	4	6						1							6	60
Mathematical Model			7	15			1		4	8													2	40
Computer Model	2		3	42	2	1		10	2	7	1	2		1	2	4		1		1	1	2	11	83
Expert System			2	4			1									3								10
Cost Progress Curve																								0
CER	2	4	16	34			1		4	8	1	2			2	2	7	2					3	88
Study	8		25	11	2		1	3	14	9		1			2	4				1			13	103

Table 4. Structure for Planning Research

I. Themes for Special Emphasis

    A. Measuring the savings from acquisition streamlining.

    B. Cost estimating techniques for the new acquisition environment

        1. Selective upgrading of existing systems

        2. Selective low-rate procurements

        3. Roll-over plus

        4. Silver bullet procurements

    C. Cost estimation for major defense acquisition programs (MDAPs) in the engineering and manufacturing development phase

        1. Methods for highlighting dependency on new technologies that either will become significant cost items in their own right or may set the pace of the program

        2. Techniques for determining technical and schedule uncertainties in ways that facilitate rational evaluation of their cost impact

    D. Techniques for estimating environmental cost throughout an MDAP's life cycle

    E. Improved contractor cost data

II. Maintenance-of-the-toolbox themes

    A. Sustain the effectiveness of established tools

        1. Updates to incorporate recent experience

        2. Improvements to broaden scope or enhance methods

    B. Incorporate new analysis techniques

    C. Make progress on difficult problems that previously have eluded solution

    D. Explore new ideas to establish their suitability for improving cost analysis

Table 5. Research Categories

	PA&E	CEAC	NCCA	AFCAA	AMCRM	ATAAC	SSDC	BMDO	NAVAIR	NAVSEA	ASC/FMC	AFSMC	HSC/EMP	ESC/EMP	RAND	Aerospace	AFTILA	DSMC	DPTCAn	CNA	MITRE	LMI	IDA	Total
I	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0
I.A	2	—	3	5	1	—	—	—	2	1	1	—	—	—	—	4	—	—	—	—	—	1	2	20
I.B	—	1	3	12	—	—	—	—	—	2	—	—	—	—	—	3	1	—	—	—	—	—	2	23
I.B.1	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	12
I.B.2	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	4	6
I.B.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0
I.B.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0
I.C	3	—	2	—	—	—	—	—	—	—	—	—	2	—	—	—	3	—	—	—	—	—	1	9
I.C.1	—	1	—	—	—	—	—	—	—	—	—	1	—	—	1	—	—	—	—	—	—	—	—	3
I.C.2	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2
I.D	1	—	—	8	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	10
I.E	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	3
II	—	—	—	19	—	—	—	5	2	3	—	—	—	—	—	—	—	—	—	—	—	3	1	1
II.A	2	6	18	5	—	—	1	3	2	3	—	—	2	—	3	2	2	—	—	—	—	—	2	36
II.A.1	4	6	21	40	—	—	1	5	2	2	1	—	2	2	2	1	3	1	—	1	1	—	12	62
II.A.2	—	1	21	23	2	—	—	2	4	4	1	4	—	—	—	1	—	1	—	2	1	1	18	119
II.B	5	2	24	4	—	—	—	3	3	14	1	1	—	2	2	1	—	1	—	2	—	—	10	85
II.C	5	2	21	13	—	—	—	—	7	8	1	1	—	—	—	2	—	—	—	—	—	—	14	74
II.D	1	—	—	—	—	—	—	1	1	6	—	—	—	—	1	4	2	—	—	—	—	1	3	54

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APPENDIX A

STUDY TITLES

STUDY TITLES

Office of the Director, Program Analysis and Evaluation

PA&E-1	Force and Support Cost (FSC) System
PA&E-2	Force and Support Cost (FSC) System and FYDP Support—VGS
PA&E-3	Visibility and Management of Operating and Support Costs (VAMOSC) for Major Weapon Systems
PA&E-4	Visibility and Management of Operating and Support Costs (VAMOSC) for Major Weapon Systems
PA&E-5	Software Cost Model Evaluation
PA&E-6	Understanding the Sources of Cost Growth
PA&E-7	Selected Acquisition Report (SAR) Cost Variance Analysis
PA&E-8	Demilitarization and Disposal Costs of Tactical Aircraft
PA&E-9	Developing Cost Estimating Relationships for the Streamlined Manufacturing Environment
PA&E-10	IDA Cost Research Symposium
PA&E-11	Cost Analysis of Advanced Materials
PA&E-12	Cost of Developing and Producing Next Generation Tactical Aircraft
PA&E-13	Avionics Development and Production Estimating
PA&E-14	Empirical Analysis of Learning Curve Parameters
PA&E-15	Contractor Cost Data Reporting (CCDR) Clearinghouse/Repository
PA&E-16	CAIG Information Center Support
PA&E-17	Planning-Defense Economic Impact Modeling System (P-DEIMS)

Army Cost and Economic Analysis Center

CEAC-1	Update FORCES Cost Model, EFCDB, Cost Factor Handbook
CEAC-2	Army Manpower Cost System (AMCOS)
CEAC-3	ACEIT/ACDB Training and Support for Army Cost Estimating Requirements
CEAC-4	Communications and Electronics Cost Model/Methodology
CEAC-5	Operating and Support Management Information System (OSMIS)
CEAC-6	Aircraft Module Data Base Update/Conversion and Methodology Enhancement
CEAC-7	Missile Module of USACEAC Standard Architecture Implementation for Missile Cost Estimation
CEAC-8	Wheeled and Tracked Vehicle Database Support and Cost Estimating Methodology Development
CEAC-9	Performance Affordability Assessments Model

Naval Center for Cost Analysis

NCCA-1   Impact of COTS Hardware Usage on Contractor and Government In-House Support Cost
NCCA-2   COTS vs. Ruggedized COTS vs. MILSPEC Equipment Cost Database and Estimating Methodology
NCCA-3   Cost Estimating Library (CEL)/Factor, Analogy, and CER Electronic Tool (FACET)
NCCA-4   Missile Cost/Technical Database
NCCA-5   Electronics Technical Database
NCCA-6   Electronic Cost Database
NCCA-7   Environmental Life Cycle Costs for Major Navy Weapon Systems
NCCA-8   Update of Naval Fixed- and Rotary-Wing Aircraft Operating and Support Cost Model
NCCA-9   Top-Level Ship Operating and Support Cost Model
NCCA-10   Avionics Operating and Support Cost Model
NCCA-11   Missile and Torpedo Operating and Support Cost Model
NCCA-12   Detailed Ship Operating and Support Cost Model
NCCA-13   Shipboard Systems Operating and Support Cost Model
NCCA-14   Software Schedule Estimating Relationships
NCCA-15   Software Development Effort Database
NCCA-16   Software Size Growth Database and Analysis
NCCA-17   Software Development Estimating Methodology
NCCA-18   Software Labor Rate Database and Analysis
NCCA-19   Computer Hardware/Software Glossary
NCCA-20   Software Technology and Life Cycle Primer
NCCA-21   Cost Element Probability Distribution Profiles
NCCA-22   Developing Correct Correlations Among Cost Element Estimates
NCCA-23   Incorporating Technical Risk in Cost Estimates
NCCA-24   Alternatives to Ordinary Least Squares (OLS)
NCCA-25   Annualized Cost Estimating Uncertainty
NCCA-26   Incorporating Schedule Risks in Cost Estimates
NCCA-27   Impact of Competition on Cost Estimating Uncertainty
NCCA-28   Ship Upgrade Cost Model
NCCA-29   Ship System Modernization Cost Database
NCCA-30   Surface Ships Construction Cost Model Update
NCCA-31   Research Investigation of COTS, Ruggedized and MILSPEC Hardware
NCCA-32   Ship System Integration Cost Database/Model
NCCA-33   Electronics Systems Procurement Hardware Cost Estimating Methodology
NCCA-34   Ship Conversion Cost Database/Model
NCCA-35   Ship System Modernization Cost Database
NCCA-36   Ship Upgrade Cost Model Update
NCCA-37   The Cost Impact of CAD/CAM on Weapon System Engineering Design, Development and Manufacturing
NCCA-38   Cost Analysis Requirements Description (CARD) Template
NCCA-39   Indirect Cost Study

NCCA-40	An Investigation into Using Artificial Intelligence (AI) Modeling Techniques to Improve Cost Estimation
NCCA-41	Aircraft Avionics and Missile System Installation Cost Study
NCCA-42	Aircraft Test and Evaluation Cost Model
NCCA-43	Initial Support and Initial Spares Cost Model
NCCA-44	Airframe Advanced Structure Material Cost Model
NCCA-45	Methodology for Estimating Costs of Major Aircraft Modifications
NCCA-46	Reengineering Aircraft Engine Cost Estimating Relationships (CERs)
NCCA-47	Aircraft System Integration Cost Database/Model
NCCA-48	Unmanned Aerial Vehicle (UAV) Data Base
NCCA-49	Missile Government In-House Support Costs
NCCA-50	Production Cost Benchmark
NCCA-51	Government In-House Cost Study for Air-Launched Missiles
NCCA-52	MK 41 Vertical Launch System Cost Analysis
NCCA-53	REVIC Calibration for Embedded, Ada and Non-Ada Projects
NCCA-54	Analysis of the Relationship Between Development and Production Costs
NCCA-55	Linkage Between VAMOSC and the PPBS
NCCA-56	Integration of Navy VAMOSC Data Base
NCCA-57	Incorporation of Infrastructure Cost into the VAMOSC Database
NCCA-58	Expansion of VAMOSC Shipboard Systems Database
NCCA-59	Price Indices for Computers
NCCA-60	Software Metrics Data Collection and Analysis for High Performance Computing Environments
NCCA-61	Use of a Partial Adjustment Model for Explaining Changes in Overhead Rates
NCCA-62	MADCAM (Microwave and Digital Cost Analysis Model)
NCCA-63	Commercial Off the Shelf (COTS) Electronics Cost and Technical Data Base

Air Force Cost Analysis Agency

AFCAA-1	Communications Payload Data Collection and DB Development
AFCAA-2	Launch Vehicle Cost Model (Below-the-Line CERs)
AFCAA-3	Space Cost Driver Research Study
AFCAA-4	Sensor Payload Data Collection and DB Development
AFCAA-5	Space System Database Consolidation (Phase II)
AFCAA-6	NAFCOM Phase I
AFCAA-7	Feasibility Study: Streamlined Acquisition Cost—Phase I
AFCAA-8	Launch Vehicle Cost Model (LVCM)—Decrement and Launch Operations
AFCAA-9	Booster/Payload Interface Standard
AFCAA-10	Streamlined Acquisition Cost Study—Phase II
AFCAA-11	NAFCOM Phase II
AFCAA-12	Re-Engineering Space Cost Estimating
AFCAA-13	Space System Database Consolidation (Phase III)
AFCAA-14	Common Bus Data Collection
AFCAA-15	Launch Vehicle (Booster) Database Update
AFCAA-16	Strategic/Navigational/Weather/Crosslinks Payload Data Collection Update
AFCAA-17	New Technology Cost Study

AFCAA-18	Space-Environmental Cost Study
AFCAA-19	Wide Area Network (WAN) Database
AFCAA-20	Common Bus CER Development
AFCAA-21	Business Base Impact Cost Study Follow-on
AFCAA-22	Ground Segment WBS/CER Development
AFCAA-23	EHF Communication Payload Database Update
AFCAA-24	Launch Database Update 99
AFCAA-25	Space Database Update 2000
AFCAA-26	Space Estimating Methodology Update 2000
AFCAA-27	Strategic/Navigational/Weather/Crosslinks Payload Data Collection
AFCAA-28	Multinational Satellite Cost Study
AFCAA-29	Bus CER Update and Development
AFCAA-30	Ground Segment Database Update
AFCAA-31	Missiles and Munitions O&S Data Collection and CER Development
AFCAA-32	Munitions Seeker Data Collection
AFCAA-33	Missiles/Munitions ACDB Update
AFCAA-34	Missiles/Munitions SE/PM CER Development
AFCAA-35	Munitions/Seeker CER Development
AFCAA-36	Missiles/Munitions ST&E CER Development
AFCAA-37	Missiles/Munitions O&S CER Update
AFCAA-38	Avionics Systems Data Collection
AFCAA-39	Multi-Aircraft Database Normalization
AFCAA-40	WRAP Rate Study
AFCAA-41	Overhead Primer
AFCAA-42	Composite/Exotic Materials Database
AFCAA-43	O&S Cost Estimating Relationships (CERs) Development for Support Equipment
AFCAA-44	Aircraft Engine Database
AFCAA-45	Composite Material Support Cost Database
AFCAA-46	Aircraft Modification Programs Study
AFCAA-47	Aircraft Database Study Follow-on
AFCAA-48	O&S Cost Estimating Relationships (CERs) Development for DLRs, PDM and Engine Overhaul
AFCAA-49	O&S Cost Estimating Relationships (CERs) Development for BMS and Sustaining Engineering
AFCAA-50	C3 Platform Integration Database
AFCAA-51	C3 Hardware Maintenance Roadmap
AFCAA-52	SEPM Database and CERs
AFCAA-53	Estimating Handbooks for ST&E, PSE, Data, Training
AFCAA-54	ADPE Tech/Discount Factor
AFCAA-55	Database/CER Updates
AFCAA-56	Post Deployment Software Support (PDSS)
AFCAA-57	Software Growth Study
AFCAA-58	Software Database Development
AFCAA-59	COTS Integration Research

AFCAA-60	Software Security Integration Study
AFCAA-61	Software Size Estimating Methods Study
AFCAA-62	Neural Network Analysis of Historic Software Development Data
AFCAA-63	Software Estimating Process Study—Generic Estimating Question Set
AFCAA-64	Software Data Collection
AFCAA-65	Expert Systems for Software Estimating
AFCAA-66	SoftEST Software Estimating Tool
AFCAA-67	Software Performance Measurement System
AFCAA-68	Activity-Based Software Estimating Methodology
AFCAA-69	Software Functional-Based Size Estimating Method—Domain and Functional Software Taxonomy
AFCAA-70	Aircraft Cost and Engineering Tool
AFCAA-71	ACDB Upgrades (FY 96)
AFCAA-72	ACDB Upgrades (FY 97 and out)
AFCAA-73	ACEIT Upgrades (FY 94)
AFCAA-74	ACEIT Upgrades (FY 95)
AFCAA-75	ACEIT Upgrades (FY 96)
AFCAA-76	ACEIT Upgrades (FY 97 and out)

Army Materiel Command

AMCRM-1	Artificial Intelligence in Cost and Economic Analysis
AMCRM-2	Acquisition Reform Savings for the Army's Defense Acquisition Pilot Program
AMCRM-3	Baseline of Services

Army Tank-Automotive and Armaments Command

| ATAAC-1 | Performance Affordability Assessment Model (PAAM) |

Army Space and Strategic Defense Command

SSDC-1	MADCOM (Microwave and Digital Cost Analysis Model)
SSDC-2	Phase One Missile System Demilitarization and Disposal Cost Data Collection
SSDC-3	Attitude Control System/TMD Boosters Cost Research

Ballistic Missile Defense Organization

BMDO-1	Cost Estimating Cross Check Guide
BMDO-2	Radar Hardware Cost Estimating Relationships (CERs) Database
BMDO-3	Missile Integration, Assembly, and Test (IA&T) Cost Methodology
BMDO-4	Endo-Atmospheric Missile Hardware Cost Estimating Relationships Database and Database Source Documentation
BMDO-5	Missile Hardware Step Functions
BMDO-6	Unit Cost vs. Production Rate Analysis
BMDO-7	Below-the-Line CERs for Missile System Production/Deployment Phase
BMDO-8	Below-the-Line CERs for Radar System Production/Deployment Phase
BMDO-9	Solid State Transmit/Receive (T/R) Module CER Update
BMDO-10	Missile Divert and Attitude Control System (DACS)

BMDO-11   Update Development Engineering Cost Estimating Relationship
BMDO-12   Laser Weapons Database and CERs
BMDO-13   Production Support Factors

Naval Air Systems Command

NAVAIR-1   Acquisition Reform Strategy Study
NAVAIR-2   Naval Aviation Modification Model (NAMM) Data Base
NAVAIR-3   Overhead Study
NAVAIR-4   Operating and Support Study
NAVAIR-5   Line Shutdown/Restart Costs
NAVAIR-6   Historical Data Book Data Base
NAVAIR-7   System Engineering/Program Management For EMD and Production
NAVAIR-8   Cost Profiles for Weapon Systems
NAVAIR-9   Update of Maurer Factor and Propulsion Data Base
NAVAIR-10   Cost Impacts of Acquisition Reform and Affordability Initiatives
NAVAIR-11   Cost Estimating Relationships for Overhead Rates (Helicopter)
NAVAIR-12   Recurring ECO Study
NAVAIR-13   Contract LRE/EAC Growth
NAVAIR-14   FY97 Cost Data Bank—Acquisition, Storage and Retrieval
NAVAIR-15   Missile Cost Magnitude Analysis
NAVAIR-16   Air Launched Missile/Bomb (Weapons) O&S Cost Model Enhancement
NAVAIR-17   Multi-Year Procurement Study
NAVAIR-18   Initial Spares Cost Data Collection and Estimating Techniques
NAVAIR-19   Support Equipment Cost Data Collection and Estimating Techniques
NAVAIR-20   Training/Trainers Cost Data Collection and Estimating Techniques
NAVAIR-21   Major Program Modification Data

Naval Sea Systems Command

NAVSEA-1   Product-Oriented Design and Construction (PODAC) Cost Data Collection and Analysis
NAVSEA-2   Costing Tools in Support of Parametric CAD Tools
NAVSEA-3   ATC ILS Model
NAVSEA-4   ATC LCC/Operating and Support Cost Model
NAVSEA-5   Cost Module for Sealift Ship Version of ASSET
NAVSEA-6   Development of Product-Oriented Cost Estimating Tools
NAVSEA-7   Product-Oriented Design and Construction (PODAC) Cost Model
NAVSEA-8   Private Shipbuilder Overhead Costs Plus Cost Effect of Best Commercial Practices Compared to Mil-Specs
NAVSEA-9   Surface Combatant Performance-Based Life Cycle Cost Model
NAVSEA-10   Shipbuilding Process Simulation Model
NAVSEA-11   Application of Simulation to Shipbuilding Cost Estimating
NAVSEA-12   Fleet-Wide Cost/Benefit Assessment
NAVSEA-13   The Ship Combat-Systems Estimating and Analysis Model
NAVSEA-14   Dynamic Investment Balance Simulator (DIBS)

NAVSEA-15	Operating Support (O&S) Costs for Surface Navy Ships Systems
NAVSEA-16	Technology-Based Parametric Cost Model
NAVSEA-17	Nuclear Attack Submarine Performance-Based Life Cycle Cost Model
NAVSEA-18	Nuclear Attack Submarine System-Based Operations and Support Cost Model
NAVSEA-19	Development of Groupware Prototypes to Connect Design and Estimating Teams
NAVSEA-20	Cost/Schedule Performance Databases
NAVSEA-21	Early Warning System Integration (EWS)
NAVSEA-22	Analysis of Operation and Support (O&S) Costs for Aircraft Carriers
NAVSEA-23	AACEI Cost Model for Surface Combatants
NAVSEA-24	Material Vendor Survey
NAVSEA-25	Shipyard Productivity—Measurement and Management
NAVSEA-26	Commercial Specs vs. Military Specs
NAVSEA-27	Metrication of the US Shipbuilding Industry
NAVSEA-28	TBMD Missile Model
NAVSEA-29	Software Maintenance Cost Process Model

Air Force Materiel Command/Aeronautical Systems Center

ASC/FMC-1	Acquisition Reform Cost Study
ASC/FMC-2	Component Breakout Analysis Tool for Acquisition
ASC/FMC-3	Advanced Aircraft Cost Forecasting Model (AACFM)

Air Force Space and Missile Systems Center

AFSMC-1	Hazardous Materials Disposal Cost Study
AFSMC-2	Operations and Support (O&S) Database
AFSMC-3	Passive Sensor Cost Model Update
AFSMC-4	Software Database (Phase VII)
AFSMC-5	Unmanned Spacecraft Cost Model (USCM) Update

Air Force Materiel Command/Human Systems Center

| HSC/EMP-1 | Hazardous Material Cost Trade-Off Analysis Tool |
| HSC/EMP-2 | Manufacturing and Maintenance Process Cost Analysis Tool |

Air Force Electronics Systems Center

| ESC/FMC-1 | Labor Rate Estimating/Evaluation Tool |
| ESC/FMC-2 | Use of Automated Cost Estimator-Integrated Tools (ACE-IT) for Cost Proposa Evaluation and the Storage of Cost/Schedule/Technical Data |

RAND Corporation

RAND-1	Understanding the Sources of Cost Growth in Weapon Systems
RAND-2	Force Structure and Support Infrastructure Costing for Program Analysis and Evaluation
RAND-3	Military Aircraft Cost Data Base

| RAND-4 | Weapon System Cost Drivers |
| RAND-5 | Air Force O&S and Force Cost Analysis |

Aerospace Corporation

Aerospace-1	Costs of Space, Launch, and Ground Systems
Aerospace-2	Validation Testing of Commercial Risk-Analysis Software
Aerospace-3	Small-Satellite Cost Engineering Model
Aerospace-4	Small-Satellite Cost Study
Aerospace-5	Costs of Benefits of Adherence to MIL-SPECs and MIL-STDs
Aerospace-6	Ground Systems Cost Model
Aerospace-7	Impact of Programmatics on System Costs
Aerospace-8	Lesson Learned Handbook for Collecting Space Systems Acquisition Expertise
Aerospace-9	Acquisition Reform Initiative System Architecture and Processes

Air Force Institute of Technology

AFIT/LA-1	The Effect of Technical Scope Changes on Defense Contract Cost Growth
AFIT/LA-2	The Distributional Properties of Cost Variances on Defense Contracts
AFIT/LA-3	An Analysis of Self-Care at WPAFB Hospital
AFIT/LA-4	An Analysis of the Purpose and Development of Management Reserve Budget
AFIT/LA-5	Comparison of Nonlinear Estimate at Completion Methods
AFIT/LA-6	An Analysis of Smart Bomb Alternatives Using the Analytic Hierarchy Process
AFIT/LA-7	Hazardous Materials Life Cycle Estimation
AFIT/LA-8	Calibration of Five Software Cost Models to an Air Force Data Base ("Pentateuch Project")
AFIT/LA-9	Calibration of Seven Software Cost Models to an Air Force Data Base ("Septuagint Project")
AFIT/LA-10	A Cost Estimating Model for Retirement of the Minuteman III Intercontinental Ballistic Missile Weapon System

Defense Systems Management College

DSMC-1	Research on Ongoing Acquisition Research (ROAR)
DSMC-2	Cost and Risk Analysis Research
DSMC-3	Cost Analysis Strategy Assessment (CASA) Model Requirements Analysis

Ministry of Defence, Directorate of Project Time and Cost Analysis

| DPTCAn-1 | Software Support Cost Model Project (SSCMP) |
| DPTCAn-2 | Forecasting and Managing "Bow Waves" in Defence Equipment Expenditure |

Center for Naval Analyses

| CNA-1 | Study of Procedures and Software for Assessment in Cost Estimates |
| CNA-2 | Update and Extension of Automated Cost Models |

MITRE Corporation

MITRE-1	MITRE's Software Cost Database
MITRE-2	Dynamic Software Life Cycle Model

Logistics Management Institute

LMI-1	Empirical Analysis of Learning Curves
LMI-2	Analysis of Institutional Training Resources
LMI-3	Returns on Individual Training Investment
LMI-4	Improving DBOF Pricing

Institute for Defense Analyses

IDA-1	Defense Programming Database
IDA-2	Cost of Defense Force Projections
IDA-3	Defense Program Projection (DPP) Support
IDA-4	FYDP Tracking and Analysis System
IDA-5	FYDP Related Studies
IDA-6	National Defense Program Costs
IDA-7	Assessing Defense Funding Supporting Readiness
IDA-8	Analytic Support to the Commission on Roles and Missions of the Armed Forces
IDA-9	Coast Guard Models
IDA-10	Program Risk Analysis and Management
IDA-11	Technical and Schedule Risk Assessments for Tactical Aircraft Programs
IDA-12	Methods to Assess Schedules for the Strategic Defense System
IDA-13	Integrated Schedule and Cost Model
IDA-14	Affordable Multi-Missile Manufacturing (AM3)
IDA-15	Space Missile Systems Nuclear Hardening Costs
IDA-16	Financial Databases of Defense Manufactures
IDA-17	Private Shipbuilders Overhead Costs
IDA-18	Economic Drivers of Defense Overhead Costs
IDA-19	Resource Analysis for Test and Evaluation
IDA-20	Resource Analysis for Acquisition Systems Protection
IDA-21	Recapitalizing the Forces
IDA-22	Rotary Wing Aircraft Recapitalization Analyses
IDA-23	USMC Utility Rotary Wing Aircraft
IDA-24	Trends in Weapon System O&S Costs
IDA-25	Evaluation of Uniformed Services Treatment Facilities
IDA-26	Estimation of Medical-Specific Inflation Indices
IDA-27	Automation of the Cost Oriented Resource Estimating Model
IDA-28	Preplanned Product Improvements and Engineering Change Proposals for Consolidated Automated Support System (CASS)
IDA-29	The Costs of Collocating Wargaming and Simulation Centers
IDA-30	Software Environments
IDA-31	Economics of Software Reuse Repositories

APPENDIX B

SUMMARIES

**OFFICE OF THE DIRECTOR,
PROGRAM ANALYSIS AND EVALUATION**

Name	Office of the Deputy Director (Resource Analysis) Program Analysis and Evaluation (PA&E)
Address	1800 Defense Pentagon Washington, DC 20301-1800
Director	David L. McNicol (703) 695-0721
Size	Professional: 36 Support: 5 Consultants: 1 Subcontractors: 17
Focus	Cost Analysis Improvement Group (CAIG) Life-Cycle Costs of Major Defense Acquisition Programs Force Structure Operating and Support Costs Economic Analysis
Activity	CAIG reviews and studies per year: 30-40 POM, Budget, FYDP reviews: As Required

Title: Force and Support Cost (FSC) System

Summary: DoD needs a quick and accurate cost estimating tool for proposed changes in forces and support infrastructure. OSD(PA&E) must supply rapid, credible, and incisive evaluations of the likely budget effects of major force and infrastructure alternatives in support of the program/budget review process. This project designs and implements an analysis system to address these fundamental issues.

Classification: Unclassified

Sponsor: OD (PA&E)
FICAD
The Pentagon, Room 2D-278
Washington, DC 20301

Daniel Parker   (703) 697-4311

Performer: RAND

Resources:

	Dollars	Staff-years
FY 96	$375,000	
FY 97	$550,000	
FY 98	$550,000	

Schedule: Start: Ongoing

End: FY 1998

Data Base:

Publications: TBD

Category: II.C

Keywords: Government, Programming, Forces, Life Cycle, Acquisition Strategy, Mathematical Modeling, Computer Model

Title:	Force and Support Cost (FSC) System and FYDP Support—VGS
Summary:	This project is the O&M adjunct to the RDT&E funded research and development effort (see PA&E-1). The O&M funding provides software maintenance of portions previously developed. FSC must be imported from Ingres to ORACLE and from Excel 4.0 macro language to Excel Visual Basic. This effort also provides critical client software support through MS Office applications such as the electronic FYDP book.
Classification:	Unclassified
Sponsor:	OD (PA&E)

FICAD
The Pentagon, Room 2D-278
Washington, DC 20301

Daniel Parker   (703) 697-4311

Performer:	RAND

Resources:

	Dollars	Staff-years
FY 96	$170,000	
FY 97	$200,000	
FY 98	$200,000	

Schedule:	Start: Ongoing
	End: FY 1998
Data Base:	
Publications:	TBD
Category:	II.C
Keywords:	Government, Programming, Forces, Life Cycle, Acquisition Strategy, Mathematical Modeling, Computer Model

Title:	Visibility and Management of Operating and Support Costs (VAMOSC) for Major Weapon Systems

Summary: Follow-on to CIM-funded Functional Process Improvement (FPI) project for VAMOSC. The FY 1997 data standardization / identification effort will be based on lessons learned from the FY 1996 VAMOSC Business Process Review (BPR) and will lay a foundation for the prototype development of the standard "To Be" VAMOSC system.

Classification: Unclassified

Sponsor: OD (PA&E)
FICAD
The Pentagon, Room 2D-278
Washington, DC 20301

Jeff Bennett   (703) 697-4311

Performer: Andrulis

Resources:

	Dollars	Staff-years
FY 96	$275,000	
FY 97	$150,000	
FY 98	$250,000	

Schedule: Start: Ongoing

End: FY 1998

Data Base:

Publications:

Category: II.A.2

Keywords: Government, Estimating, Reviewing/Monitoring, Programming, Forces, Facilities, O&S, Overhead/Indirect

Title: Visibility and Management of Operating and Support Costs (VAMOSC) for Major Weapon Systems

Summary: The objective of this effort is to maintain PA&E's VAMOSC capability. The contractor will support the VAMOSC/CIM working group and the Senior Level Steering Group, both of which comprise representatives from the CAIG, A&T, DUSD(L), CALS, DFAS, and the Services. The effort involves data modeling of Service VAMOSC databases, implementation of software that can read Service and DFAS data, update to MS Access VAMOSC database application, and analysis of VAMOSC data for weapon systems

Classification: Unclassified

Sponsor: OD (PA&E)
FICAD
The Pentagon, Room 2D-278
Washington, DC 20301

Jeff Bennett   (703) 697-4311

Performer: Andrulis

Resources:

	Dollars	Staff-years
FY 96	$93,000	
FY 97	$260,000	
FY 98	$220,000	

Schedule: Start: Ongoing

End: FY 1998

Data Base:

Publications:

Category: II.A.2

Keywords: Government, Estimating, Reviewing/Monitoring, Programming, Forces, Facilities, O&S, Overhead/Indirect

Title: Software Cost Model Evaluation

Summary: This project will (1) evaluate a well recognized software cost model against known costs for a variety of software development projects; and (2) simplify the model by reducing the independent variable space to accommodate data available to PA&E; and (3) re-evaluate the tailored model against known costs. In addition, this project will develop a new database of software costs by gathering data from program offices for software-intensive systems.

Classification: Unclassified

Sponsor: OD (PA&E)
FICAD
The Pentagon, Room 2D-278
Washington, DC 20301

Will Jarvis   (703) 697-4311

Performer: IDA

Resources:

	Dollars	Staff-years
FY 96	$50,000	
FY 97	$150,000	
FY 98	$150,000	

Schedule: Start: Ongoing

End: FY 1998

Data Base:

Publications:

Category: II.C

Keywords: Government, Estimating, Electronics/Avionics, EMD, Data Collection, Statistics/Regression, Data Base, CER

Title:	Understanding the Sources of Cost Growth

Summary: PA&E is continually involved in questions concerning the magnitude and causes of weapon system cost growth. The only publicly available documents that report cost growth in a consistent way for a significant period of time are the SARs. During the period FY 1990 to FY 1996, the RAND Corporation developed a comprehensive database of all SARs ever written and normalized and collated cost growth data from these reports. This effort will: (1) maintain the existing database by updating it with all new SARs published through December, 1996, (2) enhance the database by defining and adding variables that measure schedule growth, and (3) use the database to address policy issues related to the magnitude, sources and characteristics of cost growth and schedule growth.

Classification: Unclassified

Sponsor: OD (PA&E)
EARPD
The Pentagon, Room 2D-311
Washington, DC 20301

Jermone E. Pannullo   (703) 697-2999

Performer: RAND

Resources:

	Dollars	Staff-years
FY 96	$100,000	
FY 97	$100,000	

Schedule: Start: Ongoing

End: FY 1997

Data Base:

Publications:

Category: II.C

Keywords: Government, Analysis, Risk/Uncertainty, Data Collection, Data Base, Study

Title:	Selected Acquisition Report (SAR) Cost Variance Analysis

Summary: The project will provide insight into the magnitude and sources of major defense acquisition program (MDAP) cost growth. The project will quantify the amount of MDAP cost growth that is attributable to policy decisions as well as the amount attributable to errors on the part of the acquisition community as a whole. The principal investigators will transfer historical cost data, cost variance data, and explanatory notes contained in SARs to an electronic spreadsheet. In addition, to recording the SAR taxonomy of cost variances, the principal investigators will classify historical cost variances according to a new taxonomy, which will be provided by the project sponsor.

Classification: Unclassified

Sponsor: OD (PA&E)
EARPD
The Pentagon, Room 2D-311
Washington, DC 20301

Jermone E. Pannullo   (703) 697-2999

Performer: RAND

Resources:

	Dollars	Staff-years
FY 96	$65,000	
FY 97	$65,000	
FY 98	$165,000	

Schedule: Start: Ongoing

End: FY 1998

Data Base:

Publications:

Category: II.C

Keywords: Government, Industry, Estimating, Review, Study

Title: Demilitarization and Disposal Costs of Tactical Aircraft

Summary: The project will build analysis tools for estimating the costs of demilitarization and disposal for tactical aircraft. This task is a natural complement to two similar studies, one recently completed for large aircraft (bombers and transports) and another still in progress for tactical missiles.

Classification: Unclassified

Sponsor: OD(PA&E) with the cooperation of the three Service Cost Agencies
OAPPD
The Pentagon, Room 2D-278
Washington, DC 20301

Captain Kurt Held   (703) 697-0221

Performer: To Be Determined

Resources: Dollars:

Staff-years:

Schedule: Start: FY 1997

End: FY 1998

Data Base:

Publications:

Category: I.D

Keywords: Government, Analysis, Risk/Uncertainty, Data Collection, Data Base, Study

Title: Developing Cost Estimating Relationships for the Streamlined Manufacturing Environment

Summary: The objective of this task is to examine specific acquisition reform measures that have been proposed and to develop methodologies for predicting quantitatively the effects on RDT&E and procurement costs of acquisition reform and manufacturing streamlining.

Classification: Unclassified Proprietary

Sponsor: OD(PA&E)

Performer: IDA

Dr. Karen W. Tyson	703-845-2572
Dr. J. R. Nelson	703-845-2571

Resources: Dollars: $200,000

Staff-years: 1.3

Schedule: Start: March 1996

End: June 1997

Data Base: None

Publications: TBD

Category: I.B

Keywords: Industry, Government, Estimating, Analysis, Weapon Systems, Electronics/Avionics, EMD, Production, Labor, Material, Overhead/Indirect, WBS, Acquisition Strategy, Automation, Advanced Technology, Data Collection, Case Study, Mathematical Modeling, Economic Analysis, Statistics/Regression, Method, CER, Study

Title:	IDA Cost Research Symposium

Summary: IDA conducts a cost research symposium to facilitate the exchange of information on cost research that is in progress and planned, thereby avoiding wasteful duplication of effort and providing for more informed research planning decisions by participating offices. The Chairman, OSD CAIG, cosponsors this symposium. The 1996 symposium will focus on the DoD Six Year Cost Research Plan and the actions needed to update it. Documentation of the symposium includes a catalog of cost research projects recently completed or still in progress at participating offices. [This task appeared in the 1995 catalog as IDA-20.]

Classification: Unclassified

Sponsor: IDA Central Research Program
OD(PA&E)

Performer: IDA

Dr. Stephen J. Balut   (703) 845-2527

Resources: Dollars: $45,000

Staff-years: 0.3

Schedule: Start: October 1995

End: September 1996

Data Base: DoD Cost Research Projects

Description: One-page summary descriptions of cost research projects (this page is an example)

Automation: None

Publications: "The 1996 IDA Cost Research Symposium," Stephen J. Balut, August 1996, Unclassified, Pending

Category: II.A.1

Keywords: Government, Reviewing/Monitoring, Forces, Weapon Systems, Life Cycle, Data Collection, Data Base

Title: Cost Analysis of Advanced Materials

Summary: Advanced materials are increasingly being used in new weapon systems. Estimating the costs of systems incorporating these materials is complicated by the limited cost history and difficulty in identifying the cost drivers and risks for new materials and processes. This project will develop an advanced materials/processes primer to aid analysts in cost estimates. The materials examined will include ceramics, metal matrix composites, ceramic matrix composites, intermetallic materials and superalloys. In addition, our cost knowledge of organic matrix composites will be updated to reflect technologies developed since the studies in 1991.

Classification: Unclassified

Sponsor: OD (PA&E)
WSCAD
The Pentagon, Room 2C-310
Washington, DC 20301

Major David Nichols   (703) 697-7282

Performer: RAND

Resources:

	Dollars	Staff-years
FY 97	$200,000	

Schedule: Start: October 1996

End: September 1998

Data Base:

Publications:

Category: I.C.1

Keywords: Government, Analysis, Weapon Systems, EMD, Production, Demonstration/Validation, Labor, Material, Schedule, Study

Title: Cost of Developing and Producing Next Generation Tactical Aircraft

Summary: Over the next five years DoD will be making decisions on over $350 billion for tactical aircraft development and production. The CAIG is responsible for preparing independent cost estimates for these aircraft for cost certification to Congress. The existing tools do not address the cost of the new generation fighter aircraft. Design attributes of the next generation of tactical aircraft are not accommodated in existing cost estimating tools. Important attributes include low observable (LO), advanced materials both composites and metals, integrated avionics, and unique propulsion designs. These attributes are all evident in the F-22, and Joint Strike Fighter (JSF) program. An urgent need exists to develop the necessary cost estimating tools to support these and future tactical aircraft programs. The objective is to collect, analyze, and exploit the latest available information to develop databases and methods for estimating the development and production costs of the next generation tactical aircraft.

Classification: Unclassified

Sponsor: OD (PA&E)
WSCAD
The Pentagon, Room 2C-310
Washington, DC 20301

Gary Pennett   (703) 697-7282

Performer: IDA

Resources:

	Dollars	Staff-years
FY 97	$250,000	
FY 98	$200,000	

Schedule: Start: October 1996

End: September 1998

Data Base:

Publications:

Category: I.C.1

Keywords: Government, Estimating, Analysis, Aircraft, EMD, Material, Demonstration/Validation, Engineering

Title:	Avionics Development and Production Estimating

Summary: PA&E is continually involved in estimating development and production for new and existing avionics. Many studies have been completed in the past that deal with either development or production costs for either new or retrofit aircraft but none of the studies are comprehensive or up to date. The most recent development cost study is ten years old and the most recent production cost study is fifteen years old. With avionics becoming a larger percentage (over 25% for the F-22 and JSF) of new or retrofit aircraft development and production cost, accurate models are critical to proper program budgeting and decision making. The objective is to develop suitable cost estimating relationships for different classes of avionics for development, production, and retrofit. The results of this study will apply directly to the F-22, JSF, Camanche, and RIA programs. Other programs that will benefit from this study include: JSTARS, C-17, B-1B CUMP, and F/A-18E/F.

Classification: Unclassified

Sponsor: OD (PA&E)
WSCAD
The Pentagon, Room 2D-310
Washington, DC 20301

Gary Pennett   (703) 697-7282

Performer: IDA

Resources:

	Dollars	Staff-years
FY 97	$250,000	
FY 98	$150,000	

Schedule: Start: October 1996

End: September 1998

Data Base:

Publications:

Category: I.C.1

Keywords: Government, Estimating, Analysis, Aircraft, EMD, Engineering

Title: Empirical Analysis of Learning Curve Parameters

Summary: Recent dramatic reductions in the scale of defense programs, advancements in flexible manufacturing technologies, and the consequences of acquisition reform, put into question extrapolation of historical learning trends to future DoD acquisitions. The CAIG prepares independent cost estimates for major weapon systems that are required by statute. These estimates are highly dependent upon an accurate assessment of contractor learning curves, which are now generally based on related DoD programs' experience with learning. Consequently the extent to which factors cited will alter prospective learning rates is of over-riding importance to the independent cost estimating mission of the CAIG. The purpose of this study is to build upon the results of an ongoing study which is empirically examining the importance of factors such as the level of producibility investment, structural factors (e.g., management environment, contract type, regulatory lags, interest rates, etc.), and initial development problems in explaining experienced learning curve rates. That study focused specifically on one commodity class (tactical missiles). The primary purpose of this study is to examine the relevance of the findings for missile learning curves to other commodity classes.

Classification: Unclassified

Sponsor: OD (PA&E)
WSCAD
The Pentagon, Room 2C-310
Washington, DC 20301

Major David Nicholls   (703) 697-7282

Performer: IDA

Resources:

	Dollars	Staff-years
FY 96	$150,000	
FY 97	$200,000	

Schedule: Start: October 1996

End: September 1997

Data Base:

Publications:

> *Category:* I.B.1
>
> *Keywords:* Government, Programming, Forces, Estimating, Acquisition
> Strategy, Mathematical Modeling

Title: Contractor Cost Data Reporting (CCDR) Clearinghouse/Repository

Summary: The DoD develops cost estimates of major weapon systems using historical data, the primary sources of which are the Contractor Cost Data Reports (CCDRs) provided by hundreds of defense contractors. At this time, most of this data is transmitted in paper copy form, is not validated, and is difficult to store and disseminate in a useful manner on a wide-scale basis. To be of optimal use, these reports have to be in electronic form and be catalogued, validated, normalized, and distributed by a clearinghouse staff (5 personnel), with the assistance of a central electronic data repository. We are currently requiring contractors to submit the CCDR report in a universally accepted electronic format. The central repository will require a sophisticated suite of relational database software and hardware to handle the attendant large scale electronic data transmissions and queries. This effort will include development of automated tools for mapping corporate accounting data into formats prescribed by the CCDR reporting system, as well as a fully operating data repository that will convert the CCDR report data into a database for easy retrieval and use by DoD-wide cost analysts.

Classification: Unclassified

Sponsor: OD (PA&E)
WSCAD
The Pentagon, Room 2D-310
Washington, DC 20301

R. Wayne Knox   (703) 697-0374

Performer: To Be Determined

Resources:

	Dollars	Staff-years
FY 96	$350,000	
FY 97	$250,000	
FY 98	$250,000	

Schedule: Start: October 1996

End: September 1998

Data Base:

Publications:

    Category: I.E.

    Keywords: Government, Industry, Analysis, Labor, Material, Schedule, Study

Title: CAIG Information Center Support

Summary: The purpose of this task is to purchase equipment and software for establishing the CAIG Information Center. The immediate objective is to establish a central catalog of existing holdings, including: technical reports, CAIG case files, and PPBS documents.

Classification: Unclassified

Sponsor: OD (PA&E)
Resource Analysis
The Pentagon, Room 2D-278
Washington, DC 20301

Libbie Blaeuer   (703) 697-0221

Performer:

Resources: Dollars   Staff-years

FY 97 $50,000
FY 98 $50,000

Schedule: Start: October 1996

End: September 1998

Data Base:

Publications:

Category: II.A.2

Keywords: Government, Analysis, Labor, Material, Study

Title:	Planning-Defense Economic Impact Modeling System (P-DEIMS)

Summary: Maintain the currency of the Defense Translator within DEIMS by annually updating the translator. The Defense Translator accounts for the distribution of defense spending among the industries producing the goods and services that DoD buys, and describes the commodity composition of defense demands. [This task appeared in the 1995 catalog as PA&E-15.]

Classification: Unclassified

Sponsor: OD(PA&E)/RA/EARPD
Room 2D300, The Pentagon
Washington, DC 20301

Mr. Paul Dickens (703) 697-2999

Performer: IDA

Dr. Thomas P. Frazier (703) 845-2132
Mr. Stephen K. Welman (703) 845-2212

Resources:

	Dollars	Staff-Years
FY 85	122,000	1.0
FY 87	182,000	1.5
FY 88	40,000	0.3
FY 90	75,000	0.6
FY 92	60,000	0.5
FY 93	80,000	0.7
FY 94	160,000	1.1

Schedule: Start: July 1985

End: December 1996

Data Base: N/A

Publications: 1. "A Comparison of the DEIMS and the Department of Commerce Translator Vectors," IDA Paper P-2647, T. P. Frazier, S. K. Welman, R. H. White, March 1993, Unclassified

2. "A User's Manual for the Revised Defense Translator Model," IDA Document D-796, T. P. Frazier and J. B. Tate, June 1990, Unclassified

3. "The Revised Defense Translator," IDA Paper P-2141, T. P. Frazier, C. G. Campbell and R. T. Cheslow, October 1989, Unclassified

Category: II.A.1, II.A.2

Keywords: Government, Analysis, Budgeting, Forces, Production, Manufacturing, Mathematical Modeling, Economic Analysis, Study

ARMY COST AND ECONOMIC ANALYSIS CENTER

Name	US Army Cost and Economic Analysis Center (USACEAC)
Address	5611 Columbia Pike Falls Church, VA 22041-5050
Director	Robert W. Young Phone: (703) 681-9124 DSN: 761-9124 FAX: (703) 681-8732
Size	Professional: 2 Support: Consultants: Subcontractors:
Focus	The focus of the Army's Centrally Funded Cost Research Program is to improve the capability of the Army to develop cost estimates and economic analysis. The main categories of concentration are: 1. Data Base Development 2. Methodology Development 3. Costing the Effects of New Technology 4. Software Support Systems 5. PPBES Linkages The Commodity areas we cover are: 1. Aircraft Systems 2. Missiles and Space Systems 3. Wheel and Tracked Combat Vehicle Systems 4. Communications and Electronics Systems 5. General Systems/Future Technology/Tools and Models 6. Information Management Systems 7. Force Unit Costing 8. Operating and Support Costing
Activity	Number of projects in process: 12-15
	Average duration of a project: 9-12 months
	Average number of staff members assigned to a project: 0.25
	Average number of staff-years expended per project: 2
	Percentage of effort conducted by consultants: 0%
	Percentage of effort conducted by subcontractors: 0%

Title:	Update FORCES Cost Model, EFCDB, Cost Factor Handbook

Summary: Update the costs and factors in FORCES. Develop a deployment module that provides user with one source of input and output to estimate the cost to deploy army units in support of any type contingency to include documentation. The Forces and Organization Cost Estimating Systems (Forces) includes a Force Cost Model, Exportable Force Cost Data Base (EFCDB), Cost Factors Handbook, Military End Strength Reduction Model, and Civilian Manpower Reduction Model. The Cost Factor Handbook will be linked to ACEIT to improve cost analysts access to the data.

Classification: Unclassified

Sponsor: US Army Cost and Economic Analysis Center

Performer: Management Analysis, Inc. (MAI)

Wayne Grant

Resources: Dollars: $350,000

Staff-years: 3.0

Schedule: TBD

Data Base: The Exportable Force Cost Data Base

Publications:

Category: II.A.1

Keywords: Government, Estimating, Analysis, Forces

Title: Army Manpower Cost System (AMCOS)

Summary: The Army Manpower Cost System (AMCOS) is a family of active, reserve, and civilian manpower models developed by the Army Research Institute (ARI) to improve the accuracy and flexibility of manpower cost estimation. USACEAC has assumed responsibility for operating, maintaining, updating and modifying the AMCOS model, which is used to provide manpower cost estimates to the Army Research Laboratory, for manpower costs associated with alternative system design options. Develop Windows based database for AMCOS with a new user interface. Consolidate six AMCOS databases into a single database.

Classification: Unclassified

Sponsor: US Army Cost and Economic Analysis Center

Performer: SRA

Resources: Dollars: $130,000

Staff-years: 1.1

Schedule: TBD

Data Base:

Publications:

Category:

Keywords: Government, Estimating, Analysis, Forces, Data Collection, Manpower/Personnel

Title: ACEIT/ACDB Training and Support for Army Cost Estimating Requirements

Summary: This project funds the Army portion of a joint effort of the U.S. Army Cost & Economic Analysis Center & the Air Force Electronic Systems Center &' Air Force Cost Analysis Agency to meet the Army Cost Estimation Support Requirements. This funds approximately 27 ACEIT Training Sessions across the Army and provides dial up support for technical assistance when required. It includes the update of annual Inflation Indices, problem resolution, bug fixes and configuration control for Army Acquisition Information/Databases. This contract acts as the Super Data Base Administrator (DBA) for USACEAC commodity contractors' DBAs.

Classification: Unclassified

Sponsor: US Army Cost and Economic Analysis Center

Richard Bishop   (703) 681-9124/DSN 761-9124

Performer: Tecolote Research, Inc.'

Tom Kielpinski

Resources: Dollars: $250,000

Staff-years:

Schedule: Start: April 1996

End: May 1997

Data Base: IBM PC Compatible

Publications: Tecolote ACE-IT Users Guide

Category: II.A.1, II.A.2

Keywords: Government, Weapon Systems, Data Base

Title: Communications and Electronics Cost Model/Methodology

Summary: This project will continue to improve and expand the electronics cost model developed for USACEAC in FY96. This effort will add additional Army communications, electronics and sub-munition systems to the database and model; expand the electronics Work Breakdown Schedule to include active RF assemblies, analog electronics and power supplies. Investigate, within existing CERS, the cost relationship of change in volume for a given capability.

Classification: Unclassified

Sponsor: US Army Cost and Economic Analysis Center
Naval Surface Warfare Center

Performer: Technomics, Inc.

John Horak

Resources: Dollars:- $100,000

Staff-years: 0.85

Schedule: Start:

End: December 1996

Data Base:

Publications:

Category: I.C.2, II.A.2, II.B, II.C

Keywords: Government, Estimating, Analysis, WBS, Database, CER, Data Collection

Title: Operating and Support Management Information System (OSMIS)

Summary: OSMIS is a Management Information System designed to assist the Army in determining the historical operating and support costs of selected major fielded weapons systems through the production of cost data and cost factors based on actual usage data. The cost data generated from OSMIS is derived from interaction with existing Army Logistics Support Management Information Systems. New effort to re-host the master databases and reengineer the data collection, factor development and increase the users access to the data base. A relational database is being developed to decrease the query turn-around time dramatically.

Classification: Unclassified

Sponsor: US Army Cost and Economic Analysis Center

Terry Mateer   (703) 681-3335/DSN 761-3335

Performer: CALIBRE Systems, Inc.

Les Zavecz

Resources: Dollars: $2,000,000

Staff-years:

Schedule: TBD

Data Base:

Publications: 1. "FY 96 U. S. Army Cost Per Flying Hour Reimbursement Rate Methodology and Definitions," August 1995

2. "U.S Army Operating and Support Management Information System (OSMIS)/ Visibility and Maintenance of Operating and Support Cost (VAMOSC) Annual Report (FY96)," May 1997.

Category: II.A.1, II.A.2

Keywords: Government, Estimating, Analysis, Budgeting, Weapon Systems, Operating and Support, Data Base

Title:	Aircraft Module Data Base Update/Conversion and Methodology Enhancement
Summary:	This project will provide products to improve the capability of the Aircraft Cost Analyst to develop accurate cost estimates as high technology products and processes increase in Aircraft systems. This project includes the completion of the Aircraft Module conversion activities and the fielding of the Aircraft Module in the Automated Cost Data Base (ACDB).
Classification:	Unclassified
Sponsor:	US Army Cost and Economic Analysis Center
Performer:	Science Applications International Corporation (SAIC)
	Paul Popovich
Resources:	Dollars: $110,000
	Staff-years: 1.0
Schedule:	Start: April 1996
	End: April 1997
Data Base:	INFOARCH, Automated Cost Data Base (ACDB)
Publications:	
Category:	II.A.1, II.A.2
Keywords:	Government, Estimating, Analysis, Aircraft, Avionics, Database, Data Collection

Title: Missile Module of USACEAC Standard Architecture Implementation for Missile Cost Estimation

Summary: USACEAC has developed a standard architecture for the acquisition of Weapon and Information Management systems. The primary objective of this project is to identify and collect missile cost data from CCDRs, CPRs, contracts or other sources which can be mapped and normalized to populate the Missile Module of the USACEAC data base. Data from other DOD agencies are of particular interest if applicable to US Army Missile Systems.

Classification: Unclassified

Sponsor: US Army Cost and Economic Analysis Center

Performer: Tecolote Research, Inc.

Resources: Dollars: $100,000

Staff-years: 1.0

Schedule: TBD

Data Base:

Publications:

Category: II.A.1, II.A.2

Keywords: Government, Estimating, Analysis, Missiles, Space Systems, Database, CERS, CPR/CCDR, Data Collection

Title:	Wheeled and Tracked Vehicle Database Support and Cost Estimating Methodology Development
Summary:	This project will provide USACEAC support in the development of a Wheeled and Tracked Vehicle Module (WTVM) for the Automated Cost Data Base (ACDB), a component of the Army Cost Estimating Integrated Tool (ACEIT). Support will consist of data collection and analysis, data base evaluation and management, and the development of cost relationships using collected data. It also entails fielding the data base with demonstrations and training as well as performing special studies and analyses that further the state of the art of cost estimation of Wheeled and Tracked Vehicle Systems.
Classification:	Unclassified
Sponsor:	US Army Cost and Economic Analysis Center
Performer:	Science Applications International Corporation (SAIC)
	Robert Currie
Resources:	Dollars: $140,000
	Staff-years: 0.87
Schedule:	TBD
Data Base:	Automated Cost Data Base (ACDB)
Publications:	
Category:	II.A.1, II.A.2
Keywords:	Government, Estimating, Analysis, Land Vehicles, CERS, CPR/CCDR, Data Collection, Data Base

Title: Performance Affordability Assessments Model

Summary: Develop a cost model that captures, "Cost As An Independent Variable". Using the battlefield effectiveness model, Combined Arms Support Task Force Evaluation Model (CASTFOREM), provide linkage between the performance characteristics of systems or technologies that are played within the CASTFOREM model and their costs.

Classification: Unclassified

Sponsor: US Army Tank, Automotive and Armaments Command
US Army Cost and Economic Analysis Center

Diane Hohn   (810) 574-8693/DSN 786-8693

Performer: Science Applications International Corporation (SAIC)

Resources: Dollars: $93,000

Staff-years:

Schedule: TBD

Data Base:

Publications:

Category: I.B.1, II.C

Keywords: Estimating, Analysis, CERS, Data Base, Data Collection, Modeling, Electronics

NAVAL CENTER FOR COST ANALYSIS

Name	Naval Center for Cost Analysis
Address	111 Jefferson Davis Highway Suite 400, West Tower Arlington, VA 22202-4306
Director	Dr. Daniel A. Nussbaum (703) 604-0293 Captain John E. Fink (Deputy Director) (703) 604-0308 Mr. Rick Collins (Technical Director) (703) 604-0280
Size	Total: 33 civilian; 13 military Professional: 29 civilian; 13 military
Focus	Naval Center for Cost Analysis (NCCA) is responsible for assisting (via IPTs) in preparation of LCCC estimates for DoN weapon and automated information systems, administrating the DoN contractor cost data reporting program, managing the DoN VAMOSC Program, coordinating the DoN cost research program, and performing financial/economic analysis of DoN contractors. The focus of the NCCA cost research program is the following: 1. Improved acquisition and operating and support (O&S) cost data bases (e.g., VAMOSC). 2. Improved methods for estimating O&S costs. 3. Improved methods for estimating software development costs. 4. Methods for estimating the cost impact of acquisition reform initiatives. 5. Improved methods for evaluating of technical and cost risk and uncertainty. 6. Improved understanding of environmental costs and their impact on LCC. 7. Refinements in CERs and cost models in support of system/subsystems cost tradeoffs and evaluations of marginal costs.
Activity	Number of projects in process: 17 Average duration of a project: 19.2 months Average number of staff members assigned to a project: 1-2 Average number of staff-years expended per project: 1-2 Percentage of effort conducted by consultants: 33% Percentage of effort conducted by subcontractors: 0%

Title: Impact of COTS Hardware Usage on Contractor and Government In-House Support Cost

Summary: Develop an approach to estimating contractor and government in-house (GIH) (i.e., laboratory and field activity) support cost for shipboard electronics programs that utilize commercial off-the-shelf (COTS) and ruggedized COTS hardware. At a minimum, this effort will result in: 1) a matrix that relates a given MILSPEC/ MILSTD to the contractor and GIH cost element(s) (i.e., program management, system engineering, T&E, data, etc.) that it influences, and 2) identification and quantification of the relevant relationships (e.g., if MILSPEC A is waived, then T&E cost will decrease by 10-20 percent).

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Rick Collins   (703) 604-0280

Performer: NCCA Acquisition Reform Team

CDR Richard Heathcote   (703) 604-0284

Resources:

	Dollars	Staff-years
FY 96		0.25
FY 97		0.25

Schedule: Start: June 1996

End: December 1996

Data Base: TBD

Publications: TBD

Category: I.A, II.A.1

Keywords: Government, Estimating, Electronics/Avionics, EMD, Production, Survey, Method

Title: COTS vs. Ruggedized COTS vs. MILSPEC Equipment Cost Database and Estimating Methodology

Summary: Develop a database to facilitate MILSPEC vs. ruggedized COTS vs. COTS equipment trade-off studies and estimating methodology development. The database should include cost and technical data to support analysis at three levels of detail: 1) component (e.g., semiconductors, microcircuits, resistors, etc.); 2) circuit card assembly (CCA); and 3) cabinet. While component and CCA level data are readily available from qualified DOD vendors, cabinet level data for COTS and ruggedized COTS cabinets are not. NCA, with ASN(RD&A) and SYSCOM assistance, will request the prime contractors for selected systems currently in production to generate cost estimates for the COTS and ruggedized COTS equivalent of select MILSPEC cabinets. These estimates will be compared to the actuals for the delivered MILSPEC cabinets.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Dr. Dan Nussbaum   (703) 604-0293

Performer: NCCA Acquisition Reform Team

CDR Richard Heathcote   (703) 604-0284

Resources:

	Dollars	Staff-years
FY 96		0.25
FY 97		0.75

Schedule: Start: June 1996

End: June 1997

Data Base: MILSPEC, Ruggedized COTS, and COTS Cost and Technical Data

Publications: TBD

Title:	Cost Estimating Library (CEL)/Factor, Analogy, and CER Electronic Tool (FACET)

Summary: Two products are to be built which will be a source of in-house approved cost estimating relationships (CERs) and cost factors. CEL is a cataloged hard copy volume set of cost estimating methodologies which have been used in recent, in-house cost estimates. FACET is a spreadsheet database engine which will generate, index, and save CERs, analogies and cost factors. CEL will be phased out as FACET is phased in. Methodologies cover a wide range of Navy weapons systems.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Carl Wilbourn   (703) 604-0310

Performer: NCCA Database Team

Mr. Jim Keller   (703) 604-0286
Mr. Jeff Cherwonik   (703) 604-0272

Resources:

	Dollars	Staff-years
FY 95		0.25
FY 96		0.75
FY 97		0.25

Schedule: Start: June 1995

End: December 1996

Data Base: CERs and factors for a variety of Navy weapons systems

Publications: Completed reference manuals and spreadsheet program

Category: II.A.1, II.A.2

Keywords: Government, Estimating, Weapon Systems, Life Cycle, WBS, Statistics/Regression, Mathematical Modeling, Database, CER

Title: Missile Cost/Technical Database

Summary: Expand the USA CEAC Automated Cost Database (ACDB) missile module with cost and technical data for Navy and Joint Navy/Air Force missiles and munitions.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Carl Wilbourn   (703) 604-0310

Performer: Tecolote Research, Inc.
1700 N. Moore Street, Suite 1400
Arlington, VA 22209
(703) 243-2800

Resources:

	Dollars	Staff-years
FY 97	$100,000	
FY 98	$50,000	
FY 99	$50,000	

Schedule: Start: FY 97

End: FY 99

Data Base: USA CEAC ACDB Missile Module

Publications: None

Category: II.A.1, II.A.2

Keywords: Government, Estimating, Analysis, Missiles, EMD, Production, CPR/CCDR, Data Collection, Database

Title:	Electronics Technical Database

Summary: Develop a database for use (in conjunction with a development and procurement cost database) in generating parametric cost estimating relationships (CERs) and analogy-based cost estimates for shipboard and airborne electronic systems. The database should include physical and performance characteristics for a variety of systems, including sonar, radar, fire control, EW and launching systems.

Classification: Classified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Carl Wilbourn   (703) 604-0310

Performer: NCCA Database Team

Mr. Jim Keller   (703) 604-0286
LCDR Katherine Kinnavy   (703) 604-0295

Resources:

	Dollars	Staff-years
FY 97		0.5

Schedule: Start: October 1997

End: September 1998

Data Base: Electronics physical and performance characteristics

Publications: TBD

Category: II.A.2

Keywords: Government, Estimating, Electronics/Avionics, Development, Production, Size, Performance, Data Collection, Database, Method

Title: Electronics Cost Database

Summary: Develop a Navy electronics module for the Automated Cost Database (ACDB). The database will include cost data for a variety of shipboard and airborne electronics systems, including sonar, radar, fire control, and electronic warfare systems.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Carl Wilbourn   (703) 604-0310

Performer: Tecolote Research, Inc.
1700 N. Moore Street, Suite 1400
Arlington, VA 22209
(703) 243-2800

Resources:

	Dollars	Staff-years
FY 97	$100,000	
FY 98	$100,000	
FY 99	$100,000	
FY 00	$100,000	
FY 01	$100,000	
FY 02	$100,000	
FY 03	$100,000	

Schedule: Start: FY 97

End: FY 03

Data Base: Navy ACDB Electronics Module

Publications: TBD

Category: II.A.1, II.A.2

Keywords: Government, Estimating, Analysis, Electronics/Avionics, EMD, Production, CPR/CCDR, Data Collection, Database

Title: Environmental Life Cycle Costs of Major Navy Weapon Systems

Summary: Identify and document environmental activities and costs of Navy weapon systems throughout their entire life cycle, including final disposal. Develop lists of environmental activities, cost databases, and methodologies. Identify environmental life cycle costs not captured under existing in-house estimating techniques. Develop techniques for capturing environmental costs without double counting, thereby improving the accuracy of life cycle cost estimates. The first phase of this project will focus specifically on the Lightweight Hybrid Torpedo Program.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Jack Smuck   (703) 604-0292

Performer: NCCA Environmental Project

Mr. Paul Hardin   (703) 604-0290
Mr. Mark Daley   (703) 604-0279

Resources:

	Dollars	Staff-years
FY 95		0.4
FY 96		0.6
FY 97		1.0
FY 98		1.0
FY 99		1.0
FY 00		1.0

Schedule: Start: FY 95

End: FY 00

Data Base: TBD

Publications: NCCA Technical Report (Environmental Life Cycle Cost Analysis of the Lightweight Hybrid Torpedo Program), other reports TBD

Title:	Update of Naval Fixed- and Rotary-Wing Aircraft Operating and Support Cost Model

Summary: Provide a revision of the December 1990 Operating and Support (O&S) cost model by updating cost and characteristic information and by adding new aircraft to the data base. Includes collection of data, development of CERs and/or cost factors, both Direct and Indirect, as identified in recent new CAIG guidelines for O&S cost estimating.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Carl Wilbourn   (703) 604-0310

Performer: NCCA Operating and Support Cost Team

Mr. Robert Hirama   (703) 604-0303
CDR Dan Schluckebier   (703) 604-0313

Resources:

	Dollars	Staff-years
FY 96		0.5
FY 97		0.5

Schedule: Start: July 1996

End: June 1997

Data Base: VAMOSC/other cost data and technical data

Publications: Completed Study Report

Category: II.A.2

Keywords: Government, Analysis, Aircraft, Operation and Support, Readiness, Data Collection, Study

Title:	Top-Level Ship Operating and Support Cost Model
Summary:	Create a parametric cost estimating model, using the VAMOSC Individual Ship Report as the underlying database, for a top-level model which estimates annual ship operating and support costs as a function of light displacement, overall length, number of officers assigned, and number of enlisted assigned.
Classification:	Unclassified

Sponsor:

Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Carl Wilbourn   (703) 604-0310

Performer: NCCA Operating and Support Cost Team

LT Timothy Anderson   (703) 604-0296

Resources:

	Dollars	Staff-years
FY 96		0.75
FY 97		0.25

Schedule: Start: January 1996

End: December 1997

Data Base: VAMOSC/other cost data and technical data

Publications: Completed study report and appropriate spreadsheet files

Category: II.A.2

Keywords: Government, Estimating, Ships, Operations and Support, Labor, Overhead/Indirect, Statistics/Regression, Computer Model

Title:	Avionics Operating and Support Cost Model

Summary:
Design and build an Operating and Support Cost Model that can be used to better estimate the operating and support costs of Navy Avionics Systems. The model will be user friendly and will utilize to the maximum extent all operating and support data collected through VAMOSC and other Navy reporting systems. The model will be flexible enough to allow for sensitivity analysis and the exploration of cost reductions. Documentation and training will be provided for model users. Model relationships will be updated annually as new data is collected. Model improvements will be made as needed by incorporating additional systems and cost elements. Additional cost elements will be added as data becomes available in our quest for eventually providing a model that reflects total cost of ownership.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Carl Wilbourn   (703) 604-0310

Performer: NCCA Operating and Support Cost Team

Mr. Paul Hardin   (703) 604-0290

Resources:

	Dollars	Staff-years
FY 97		1.0
FY 98		0.5
FY 99		0.5
FY 00		0.5
FY 01		0.5

Schedule: Start: November 1996

End:

Data Base: VAMOSC/other cost data and technical data

Publications: Mathematical model with supporting documentation

Title:	Missile and Torpedo Operating and Support Cost Model

Summary: Design and build an Operating and Support Cost Model that can be used to better estimate the operating and support costs of Navy Missiles and Torpedoes. The model will be user friendly and will utilize to the maximum extent all operating and support data collected through VAMOSC and other Navy reporting systems. The model will be flexible enough to allow for sensitivity analysis and the exploration of cost reductions. Documentation and training will be provided for model users. Model relationships will be updated annually as new data is collected. Model improvements will be made as needed by incorporating additional systems and cost elements. Additional cost elements will be added as data becomes available in our quest for eventually providing a model that reflects total cost of ownership.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Carl Wilbourn   (703) 604-0310

Performer: NCCA Operating and Support Cost Team

Mr. Paul Hardin   (703) 604-0290

Resources:

	Dollars	Staff-years
FY 97		1.0
FY 98		0.5
FY 99		0.5
FY 00		0.5
FY 01		0.5

Schedule: Start: November 1996

End:

Data Base: VAMOSC/other cost data and technical data

Publications: Mathematical model with supporting documentation

Title: Detailed Ship Operating and Support Cost Model

Summary: Design and build an Operating and Support Cost Model that can be used to better estimate the operating and support costs of Navy ships. The model will be user friendly and will utilize to the maximum extent all operating and support data collected through VAMOSC and other Navy reporting systems. The model will be flexible enough to allow for sensitivity analysis and the exploration of cost reductions. Documentation and training will be provided for model users. Model relationships will be updated annually as new data is collected. Model improvements will be made as needed by incorporating additional systems and cost elements. Additional cost elements will be added as data becomes available in our quest for eventually providing a model that reflects total cost of ownership.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Carl Wilbourn   (703) 604-0310

Performer: NCCA Operating and Support Cost Team

Ms. Nancy St.Louis   (703) 604-0282
LT Timothy Anderson   (703) 604-0296

Resources:

	Dollars	Staff-years
FY 96		0.25
FY 97		0.75

Schedule: Start: July 1996

End: September 1997

Data Base: VAMOSC/other cost data and technical data

Publications: Mathematical model with supporting documentation

Category: II.B, II.C, II.D

Title: Shipboard Systems Operating and Support Cost Model

Summary: Design and build an Operating and Support Cost Model that can be used to better estimate the operating and support costs of Navy shipboard systems. The model will be user friendly and will utilize to the maximum extent all operating and support data collected through VAMOSC and other Navy reporting systems. The model will be flexible enough to allow for sensitivity analysis and the exploration of cost reductions. Documentation and training will be provided for model users. Model relationships will be updated annually as new data is collected. Model improvements will be made as needed by incorporating additional systems and cost elements. Additional cost elements will be added as data becomes available in our quest for eventually providing a model that reflects total cost of ownership.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Carl Wilbourn   (703) 604-0310

Performer: NCCA Operating and Support Cost Team

Mr. Paul Hardin   (703) 604-0290
Ms. Collen McAuliffe   (703) 604-0271

Resources:

	Dollars	Staff-years
FY 96		1.0
FY 97		0.5

Schedule: Start: January 1996

End:

Data Base: VAMOSC/other cost data and technical data

Publications: Mathematical model with supporting documentation

Category: II.B, II.C, II.D

Title: Software Schedule Estimating Relationships

Summary: Using the NCCA Software Development Effort Database, develop top-level parametric relationships that estimate schedule as a function of objective metrics such as lines of code and effort. Also, review and summarize current industry methodologies for estimating software schedule compression/elongation.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Rick Collins   (703) 604-0280

Performer: NCCA Software Team

Mr. Lowell Blagmon   (703) 604-0274

Resources: Dollars:

Staff-years: 0.5

Schedule: Start: September 1995

End: August 1996

Data Base: TBD

Publications: TBD

Category: II.A.1, II.A.2, II.C

Keywords: Government, Estimating, Electronics/Avionics, EMD, Data Collection, Statistics/Regression, Data Base, CER

Title: Software Development Effort Database

Summary: Compile a weapon system software development database to support: 1) derivation of parametric software development effort estimating relationships and 2) preparation of analogy-based software development effort estimates. The database comprises 457 data points, including 151 program level and 306 CSCI level data points. Over 70 percent of the data points were extracted from several existing databases, including SMC, Mitre Ada, Mitre Non-Ada and SEL. The remaining data points were collected by NCCA. For each data point, the database includes objective metrics such as effort (man-months), lines of code, language, level of re-use, schedule and platform.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Rick Collins   (703) 604-0280

Performer: NCCA Software Team

Mr. Michael Gallo   (703) 604-0316

Resources:

	Dollars	Staff-years
FY 95		0.5
FY 96		0.5

Schedule: Start: January 1995

End: August 1996

Data Base: Software Development Effort Database

Publications: TBD

Category: II.A.1, II.A.2, II.C

Keywords: Government, Estimating, Electronics/Avionics, EMD, Data Collection, Statistics/Regression, Data Base, CER

Title:	Software Size Growth Database and Analysis

Summary: Compile a software development database to support derivation of software size growth estimating relationships. The database comprises program level and CSCI level data points for each data point, the database includes objective metrics such as estimated vs. actual lines of code, level of re-use, language, and mission. Use the database to derive software size growth estimating relationships.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
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Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Rick Collins   (703) 604-0280

Performer: NCCA Software Team

CDR Barbara Marsh-Jones   (703) 604-0304

Resources:

	Dollars	Staff-years
FY 95		0.25
FY 96		0.5

Schedule: Start: June 1995

End: August 1996

Data Base: Software Line of Code Growth Database

Publications: TBD

Category: II.A.2, II.C, II.D

Keywords: Government, Analysis, Electronic/Avionics, Weapon Systems, Life Cycle, Data Collection, Data Base

Title: Software Development Estimating Methodology

Summary: Using the NCCA Software Development Effort Database, develop:
1) top-level productivity factors and 2) parametric relationships
that estimate development effort as a function of objective metrics
such as lines of code, language, platform, and level of re-use.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Rick Collins   (703) 604-0280

Performer: NCCA Software Team

Mrs. Cheri Cummings   (703) 604-0275
Mr. Michael Gallo   (703) 604-0316

Resources:

	Dollars	Staff-years
FY 95		0.25
FY 96		0.75

Schedule: Start: June 1995

End: August 1996

Data Base: None

Publications: TBD

Category: II.A.1, II.A.2, II.C

Keywords: Government, Estimating, Electronics/Avionics, EMD, Data
Collection, Statistics/Regression, Data Base, CER

Title: Software Labor Rate Database and Analysis

Summary: Compile a weapon system software development database to support derivation of contractor software labor rate estimating relationships and average contractor software labor rates. The database includes objective metrics such as effort (man-hours), cost, price, contract type, platform and contractor location. Use the database to develop rate estimating relationships and average rates.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Rick Collins   (703) 604-0280

Performer: NCCA Software Team

Mrs. Pamela Johnson   (703) 604-0294

Resources: Dollars   Staff-years

FY 95   0.25
FY 96   0.75

Schedule: Start: January 1995

End: August 1996

Data Base: Software Labor Rate Data Base

Publications: TBD

Category: II.A.1, II.A.2, II.C

Keywords: Software, Government, Data Collection, Data Base

Title: Computer Hardware/Software Glossary

Summary: Develop a computerized glossary in dBASE format of key computer hardware/software related acronyms and terms commonly used by cost analysts.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Rick Collins   (703) 604-0280

Performer: NCCA Software Team

Mr. Lowell Blagmon   (703) 604-0274

Resources: Dollars:

Staff-years: 0.25

Schedule: Start: October 1993

End: August 1996

Data Base: None

Publications: Computer Hardware/Software Glossary

Category: II.A.2

Keywords: Government, Analysis, Electronic/Avionics, Weapon Systems, Life Cycle, Data Collection, Data Base

Title:	Software Technology and Life Cycle Primer

Summary: Develop a primer that reviews basic concepts of: software life cycle, software development standards, software development process, and software cost estimating. Primer includes a review and comparison of MIL-STD 2167 vs. MIL-STD 498.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Rick Collins   (703) 604-0280

Performer: NCCA Software Team

Mrs. Cheri Cummings   (703) 604-0275

Resources: Dollars:

Staff-years: 0.25

Schedule: Start: October 1995

End: August 1996

Data Base: None

Publications: Software Primer

Category: II.A.2

Keywords: Government, Analysis, Electronic/Avionics, Weapon Systems, Life Cycle, Survey, Study

Title: Cost Element Probability Distribution Profiles

Summary: This study will investigate and model major cost elements' underlying probability distributions. This effort will enable the analyst to more accurately conduct cost uncertainty analysis and derive bounds about a point estimate.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Jack Smuck   (703) 604-0292

Performer: NCCA Uncertainty/Risk Project

Mr. Jeff Cherwonik   (703) 604-0272

Resources: Dollars:

Staff-years: FY 99: 0.5

Schedule: Start: FY 99

End: FY 99

Data Base: CCDRs and CPRs

Publications: Completed Study Report

Category: II.B, II.C, II.D

Keywords: Government, Analysis, Weapon Systems, Production, Risk/Uncertainty, Data Collection, Mathematical Modeling, Mathematical Model

Title:	Developing Correct Correlations Among Cost Element Estimates
Summary:	Investigate correlation among WBS element reported contractor costs and develop mathematical relationships which model historical relationships. Incorporate research into risk analysis to more accurately assess cost estimating uncertainty.
Classification:	Unclassified
Sponsor:	Naval Center for Cost Analysis 1111 Jefferson Davis Highway Suite 400, West Tower Arlington, VA 22202-4306 Mr. Jack Smuck (703) 604-0292
Performer:	NCCA Uncertainty/Risk Project Mr. Jeff Cherwonik (703) 604-0272
Resources:	Dollars: Staff-years: FY 99: 0.5
Schedule:	Start: FY 99 End: FY 99
Data Base:	Various Missile CCDRs and CPRs
Publications:	Completed Study Report
Category:	II.B, II.C, II.D
Keywords:	Government, Analysis, Weapon Systems, Missiles, EMD, Production, Risk/Uncertainty, Statistics/Regression, Mathematical Model

Title:	Incorporating Technical Risk in Cost Estimates
Summary:	This research involves identifying and quantifying the impact of technical parameters (weight, power output, speed, etc.) that are not well defined early in a program and pose risk to the performance and cost of the end product. The researcher will develop an historical database of various Navy systems and determine the upper and lower bounds within which a given parameter could vary. These bounds will form the basis for uncertainty analysis of future systems.
Classification:	Unclassified
Sponsor:	Naval Center for Cost Analysis 1111 Jefferson Davis Highway Suite 400, West Tower Arlington, VA 22202-4306 Mr. Jack Smuck (703) 604-0292
Performer:	NCCA Uncertainty/Risk Project Mr. Jeff Cherwonik (703) 604-0272
Resources:	Dollars: Staff-years: FY 97: 0.5
Schedule:	Start: FY 97 End: FY 97
Data Base:	Contains historical cost data from the government and Navy contractors for various Navy weapon systems programs
Publications:	Completed Study Report
Category:	II.B, II.C, II.D
Keywords:	Government, Study, Weapon Systems, EMD, Data Collection, Analysis, Data Base

Title: Alternatives to Ordinary Least Squares (OLS)

Summary: Analysts have typically used OLS in conducting risk and uncertainty regression analyses. This research will examine generalized least squares and weighted least squares as alternatives.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
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Arlington, VA 22202-4306

Mr. Jack Smuck   (703) 604-0292

Performer: NCCA Uncertainty/Risk Project

Mr. Jeff Cherwonik   (703) 604-0272

Resources: Dollars:

Staff-years: FY 98: 0.5

Schedule: Start: FY 98

End: FY 98

Data Base: Historical Contractor Data

Publications: Completed Study Report

Category: II.B, II.D

Keywords: Industry, Analysis, Weapon Systems, Risk/Uncertainty, Statistics/Regression, Mathematical Model

Title: Annualized Cost Estimating Uncertainty

Summary: Most risk and uncertainty analysis is performed at the overall phase level. A range is constructed in an attempt to bound the point estimate with some level of statistical confidence. This study will address the adjustments which must be made when an analyst requires cost estimate bounds for individual years rather than the whole phase.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
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Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Jack Smuck   (703) 604-0292

Performer: NCCA Uncertainty/Risk Project

Mr. Jeff Cherwonik   (703) 604-0272

Resources: Dollars:

Staff-years: FY 98: 0.3

Schedule: Start: FY 98

End: FY 98

Data Base: Contractor Cost Data

Publications: Completed Study Report

Category: II.B, II.D

Keywords: Industry, Analysis, EMD, Production, Operations and Support, Risk/Uncertainty, Statistics/Regression, Mathematical Model

Title: Incorporating Schedule Risks in Cost Estimates

Summary: Risk and uncertainty analyses typically focus on the inherent variance of the cost estimating relationships and underlying data. This study will focus on the component of cost estimating uncertainty driven by program schedule.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
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Mr. Jack Smuck   (703) 604-0292

Performer: NCCA Uncertainty/Risk Project

Mr. Jeff Cherwonik   (703) 604-0272

Resources: Dollars:

Staff-years: FY 97: 0.3

Schedule: Start: FY 97

End: FY 97

Data Base: Contractor and Government Cost and Schedule Data

Publications: Completed Study Report

Category: II.D

Keywords: Government, Analysis, Life Cycle, Schedule, Data Collection, Data Base

Title: Impact of Competition on Cost Estimating Uncertainty

Summary: The impact of competition is often modeled as a shift and/or rotation of manufacturing learning curves. While much attention has been given to the derivation of these factors, their impact on statistical variance is often overlooked. This project will review previous competition analyses from the standpoint of variance analysis. Conclusions will be drawn which highlight the effects of competition on cost estimating uncertainty.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
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Arlington, VA 22202-4306

Mr. Jack Smuck   (703) 604-0292

Performer: NCCA Uncertainty/Risk Project

Mr. Jeff Cherwonik   (703) 604-0272

Resources: Dollars:

Staff-years: FY 97: 0.3

Schedule: Start: FY 97

End: FY 97

Data Base: Contractor Cost Data

Publications: Completed Study Report

Category: II.B, II.D

Keywords: Contractor, Acquisition Strategy, Analysis, Production, Risk/Uncertainty, Statistics/Regression, Mathematical Model

Title:	Ship Upgrade Cost Model

Summary: Develop model that estimates the construction costs associated with major upgrades (i.e., forward-fit) of Naval vessels, including surface combatants, auxiliary and amphibious ships. This effort includes the update/expansion of the existing cost/technical database and development of parametric cost estimating relationships (CERs) via statistical analysis.

Classification: Cost Data—Business Sensitive

Technical Characteristics—Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Rick Collins   (703) 604-0280

Performer: Gibbs & Cox, Inc.
1235 Jefferson Davis Highway
Arlington, VA 22202

Mr. Eric Midboe   (703) 416-3620

Resources: Dollars: FY 95: $63,000

Staff-years:

Schedule: Start: Complete

End:

Data Base: Ship Upgrade Cost and Technical Characteristics

Publications: US Navy Ship Upgrade Construction Cost Model

Category: I.A.1, II.C

Keywords: Government, Estimating, Ships, Production, WBS, Data Collection, CER, Data Base, Method

Title: Ship System Modernization Database

Summary: Update NCCA's ship modernization cost database, which includes shipboard installation labor/material cost and electronics/ordnance procurement cost.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Jack Smuck   (703) 604-0292

Performer: TBD

Resources: Dollars: FY 99: $75,000

Staff-years:

Schedule: Start: FY 99

End: FY 99

Data Base: Ship System Modernization Cost Characteristics

Publications: TBD

Category: II.A.1, II.A.2

Keywords: Government, Estimating, Ships, Production, WBS, Data Collection, Data Base

Title:	Surface Ships Construction Cost Model Update
Summary:	Update NCCA's existing model that estimates the construction cost of lead surface (combatant, auxiliary and amphibious) ships. This effort includes the update /expansion of the existing cost/technical database and development of parametric cost estimating relationships (CERs) via statistical analysis.
Classification:	Cost Data—Business Sensitive Technical Characteristics—Unclassified
Sponsor:	Naval Center for Cost Analysis 1111 Jefferson Davis Highway Suite 400, West Tower Arlington, VA 22202-4306 Mr. Jack Smuck (703) 604-0292
Performer:	Contractor TBD

Resources:

	Dollars	Staff-years
FY 98	$47,000	
FY 99	$47,000	
FY 00	$46,000	

Schedule:	Start: FY 98 End: FY 00
Data Base:	Surface ship construction cost and technical characteristics
Publications:	TBD
Category:	II.A.1, II.A.2
Keywords:	Government, Estimating, Ships, Production, WBS, Data Collection, CER, Data Base, Method

Title:	Research Investigation of COTS, Ruggedized and MILSPEC Hardware
Summary:	Review recent developments in the US electronics industry and current DOD procurement policies enacted in response to these developments and current military requirements. Compare test and inspection requirements for MILSPEC and non-MILSPEC components. Develop a limited cost/technical database that compares the prices of comparable MILSPEC, ruggedized and COTS components.
Classification:	Unclassified
Sponsor:	Naval Center for Cost Analysis 1111 Jefferson Davis Highway Suite 400, West Tower Arlington, VA 22202-4306
	Ms. Cheri Cummings (703) 604-0275
Performer:	Cygnus Associates, Inc. P.O. Box 2642 Springfield, VA 22152-0642
	Mr. Bob Swan (703) 425-5466
Resources:	Dollars: FY 95: $50,000 Staff-years:
Schedule:	Start: Complete End:
Data Base:	Component Cost Data and Technical Characteristics
Publications:	Research Investigations of COTS, Ruggedized and MILSPEC Hardware
Category:	I.B.1, II.B, II.C
Keywords:	Government, Estimating, Electronics/Avionics, Production, Data Collection, Data Base, Study

Title:	Ship System Integration Cost Database/Model

Summary: Develop a database and cost estimating methodology for projecting hardware integration and hardware/software integration costs for shipboard electronic and weapon systems. The database should include cost data, technical characteristics and other relevant information (e.g., software size) for a variety of systems, including sonar, radar, fire control, EW and launching systems. The cost data should include relevant contractor and Navy in-house costs.

Classification: Cost Data: Business Sensitive
Technical Characteristics: Classified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Jack Smuck   (703) 604-0292

Performer: NCCA, In-House

Ms. Cheri Cummings   (703) 604-0275

Resources:

	Dollars	Staff-years
FY 97		0.5
FY 98		0.5

Schedule: Start: FY 97

End: FY 98

Data Base: Ship Systems Electronics Cost and Technical Characteristics

Publications: TBD

Category: II.A.2

Keywords: Government, Estimating, Weapon Systems, Missiles, Ships, Electronics, EMD, Production, Data Collection, Data Base, Method

Title: Electronics Systems Procurement Hardware Cost Estimating Methodology

Summary: Develop parametric procurement cost estimating relationships (CERs) for shipboard and airborne electronics hardware; including sonar, radar, fire control, EW, and launching systems.

Classification: Classified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Rick Collins   (703) 604-0280

Performer: NCCA, In-House

Resources: Dollars:

Staff-years: FY 97: 0.5

Schedule: Start: FY 97

End: FY 97

Data Base: None

Publications: TBD

Category: II.A.2

Keywords: Government, Estimating, Electronics/Avionics, Production, Labor, Material, Overhead, Statistics/Regression, CER

Title:	Ship Conversion Cost Database/Model
Summary:	Develop a ship conversion database and cost estimating methodology. The database should include both cost data and technical characteristics of military (US and foreign) and commercial ship conversions. The cost data should encompass detail design and construction.
Classification:	Unclassified
Sponsor:	Naval Center for Cost Analysis 1111 Jefferson Davis Highway Suite 400, West Tower Arlington, VA 22202-4306
	Mr. Jack Smuck (703) 604-0292
Performer:	NCCA, In-House
Resources:	Dollars: - Staff-years: FY 97: 0.5
Schedule:	Start: FY 97 End: FY 97
Data Base:	Ship Conversion Cost and Technical Characteristics
Publications:	TBD
Category:	II.C
Keywords:	Government, Estimating, Ships, Development, Production, WBS, Data Collection, Data Base, Method

Title: Ship System Modernization Cost Database

Summary: Update the electronics/ordnance portion of NCCA's ship modernization cost database. Data collected includes shipyard installation labor and material cost and equipment procurement cost.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Rick Collins   (703) 604-0280

Performer: Gibbs & Cox, Inc.
1235 Jefferson Davis Highway
Arlington, VA 22202

Mr. Eric Midboe   (703) 416) 3620

Resources: Dollars: FY 95: $62,000

Staff-years:

Schedule: Start: Complete

End:

Data Base: Ship System Modernization Cost

Publications: US Navy Ship Modernization Cost Database

Category: II.A.1, II.A.2

Keywords: Government, Estimating, Ships, Production, WBS, Data Collection, Data Base

Title: Ship Upgrade Cost Model Update

Summary: Update NCCA's existing model that estimates the construction costs associated with major upgrades (i.e., forward-fit) of Naval vessels, including surface combatants, auxiliary and amphibious ships. This effort includes the update/expansion of the existing cost/technical database and development of parametric cost estimating relationships (CERs) via statistical analysis.

Classification: Cost Data: Business Sensitive
Technical Characteristics: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Jack Smuck   (703) 604-0292

Performer: Contractor TBD

Resources: Dollars: FY 00: $75,000

Staff-years:

Schedule: Start: FY 00

End: FY 00

Data Base: Ship Upgrade Cost and Technical Characteristics

Publications: TBD

Category: I.B.1, II.C

Keywords: Government, Estimating, Ships, Production, WBS, Data Collection, CER, Data Base, Method

Title: The Cost Impact of CAD/CAM on Weapon System Engineering Design, Development and Manufacturing

Summary: The objective of this study is to quantify the cost savings from using a CAD/CAM system in the engineering design and manufacturing process. The widespread use of the CATIA system used on multiple weapon system platforms will be investigated. While it is expected that there is a large initial fixed cost at the beginning of the design process, a net savings should be realized from the reduced time for engineering rework, manufacturing setup and optimized manufacturing processes.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Rick Collins   (703) 604-0280

Performer: NCCA, In-House

Resources:

	Dollars	Staff-years
FY 97		1.0
FY 98		1.0

Schedule: Start: FY 97

End: FY 98

Data Base: The data base will include information on quantified and substantiated contractor data on man-hour savings and product information on the various CAD/CAM systems with differences in performance identified.

Publications: Completed Study Report

Category: I.B, II.B, II.C, II.D

Keywords: Government, Analysis, Weapon Systems, EMD, Manufacturing, Labor, Cost, Schedule, Case Study, Review, Study

Title:	Cost Analysis Requirements Description (CARD) Template

Summary: The documentation requirements for ACAT I milestone reviews now includes a CARD. However, there are no standards as to the type of information which a CARD should contain. This task is to review detail level CERs for recurring manufacturing hardware, for WBS elements in development, for below the line costs, and for the O&S phase and to prepare a draft CARD (or a specification for preparing CARDs) which elicits the information needed to prepare a life cycle cost estimate. In addition, general guidance will be provided for each section of the CARD instructions.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
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Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Jack Smuck   (703) 604-0292

Performer: NCCA, In-House

Mr. Jeff Cherwonik   (703) 604-0272

Resources: Dollars:

Staff-years: FY 97: 0.3

Schedule: Start: FY 97

End: FY 97

Data Base: None

Publications: Templates

Category: II.A.2

Keywords: Government, Life Cycle, Study

Title: Indirect Cost Study

Summary: Conduct a study to determine indirect costs (infrastructure costs) of manpower assigned to the at-sea operating forces. For every direct at-sea manpower dollar spent, determine how many indirect dollars are spent.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
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Mr. Jack Smuck   (703) 604-0292

Performer: NCCA, In-House

Mr. Leonard Cheshire   (703) 604-0285

Resources:

	Dollars	Staff-years
FY 96		0.5
FY 97		0.5

Schedule: Start: FY 96

End: FY 97

Data Base: None

Publications: TBD

Category: II.C

Keywords: Government, Overhead/Indirect, Infrastructure, Study

Title: An Investigation into Using Artificial Intelligence (AI) Modeling Techniques to Improve Cost Estimation

Summary: This project will be conducted in three phases. The first phase will involve identifying the fundamental assumptions that lead to inaccurate or misleading cost estimates. A few of the problem areas to be addressed are homogeneity, independence, continuity, technical risk, and the inherent bias of human decision making. The second phase of the project will explore the feasibility of applying AI to correct these deficiencies. In the final phase, a simplistic cost estimating model will be developed to demonstrate the effectiveness of these new techniques.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Rick Collins   (703) 604-0280

Performer: NCCA, In-House

Mr. Mark B. Daley   (703) 604-0279

Resources:

	Dollars	Staff-years
FY 95		0.2
FY 96		0.2
FY 97		0.5
FY 98		0.5

Schedule: Start: June 1995

End: June 1998

Data Base: TBD

Publications: Completed Study Report

Category: I.A, II.B, II.C, II.D

Title:	Aircraft Avionics and Missile System Installation Cost Study
Summary:	Update and expand on a previously-developed aircraft avionics and missile system retrofit installation cost model.
Classification:	Unclassified
Sponsor:	Naval Center for Cost Analysis 1111 Jefferson Davis Highway Suite 400, West Tower Arlington, VA 22202-4306 Mr. Dan Nussbaum (703) 604-0293
Performer:	NCCA, In-House
Resources:	Dollars: Staff-years: FY 97: 1.0
Schedule:	Start: October 1996 End: October 1997
Data Base:	Historical cost data obtained from the government and aircraft manufacturers for selected Navy aircraft programs.
Publications:	Completed Study Report
Category:	II.A.1
Keywords:	Government, Electronics/Avionics, Missiles, Modification, Case Study, Study

Title: Aircraft Test and Evaluation Cost Model

Summary: Develop a cost model and database for analogy cost estimating of contractor and in-house test and evaluation requirements through completion of EMD. Expand research to include procurement non-recurring and system testing. Analyze cost significance of length of program, and number, duration and type of flight tests.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Dan Nussbaum   (703) 604-0293

Performer: NCCA, In-House

Resources: Dollars:

Staff-years: FY 98: 1.0

Schedule: Start: October 1997

End: September 1998

Data Base: Historical cost data obtained from the government and aircraft manufacturers for Navy aircraft programs.

Publications: Completed Study Report

Category: II.A.1

Keywords: Government, Analysis, Aircraft, Test and Evaluation, Schedule, Data Collection, Study

Title:	Initial Support and Initial Spares Cost Model
Summary:	Update the Integrated Logistics Support 1988 cost model. Identify and collect historical data on major sub-elements of initial support and initial spares for analogy cost estimating and for revising CCDR ILS WBS elements. Repair Parts, Simulators and Test Performance sets are possible Level 3 items.
Classification:	Unclassified
Sponsor:	Naval Center for Cost Analysis 1111 Jefferson Davis Highway Suite 400, West Tower Arlington, VA 22202-4306 Mr. Dan Nussbaum (703) 604-0293
Performer:	Contractor TBD
Resources:	Dollars: FY 97: $100,000 Staff-years:
Schedule:	Start: January 1997 End: January 1998
Data Base:	Historical cost data obtained from NAVAIR and aircraft manufacturers for Navy aircraft programs.
Publications:	Completed Study Report
Category:	II.A.1
Keywords:	Government, Analysis, Aircraft, Production, WBS, Data Collection, Study

Title: Airframe Advanced Structure Material Cost Model

Summary: Update 1988 cost model on impact of use of advanced structure materials in the manufacture of aircraft. In particular, collect and analyze recent cost data by functional categories on the F-14D, V-22, F/A-18C/D and AV-8B. Also, investigate cost experience and plans for advanced material usage on the F/A-18E/F, JSF, and F-22.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Dan Nussbaum   (703) 604-0293

Performer: NCCA, In-House

Resources:

	Dollars	Staff-years
FY 98		0.75
FY 99		1.0
FY 00		0.25

Schedule: Start: December 1997

End: December 1999

Data Base: Historical cost data obtained from the government and aircraft manufacturers for Navy aircraft programs.

Publications: Completed Study Report

Category: II.A.2

Keywords: Government, Analysis, Aircraft, Production, Materials, Data Collection, Study

Title:	Methodology for Estimating Costs of Major Aircraft Modifications
Summary:	Study cost experience of recently upgraded aircraft such as F-14A, EA-6B, A-6 and AV-8B to develop cost estimating methodology for future upgrade programs. This study addresses EMD costs associated with airframe modifications and remanufacture development, and avionics/engine integration. Benefits theme: "Cost estimating for acquisition in the EMD phase."
Classification:	Unclassified
Sponsor:	Naval Center for Cost Analysis 1111 Jefferson Davis Highway Suite 400, West Tower Arlington, VA 22202-4306
	Mr. Dan Nussbaum (703) 604-0293
Performer:	NCCA, In-House

Resources:

	Dollars	Staff-years
FY 99		1.0
FY 00		1.0

Schedule:	Start: October 1998
	End: October 2000
Data Base:	Historical aircraft modification and remanufacture cost data obtained from the government and aircraft manufacturers for selected Navy aircraft programs.
Publications:	Completed Study Report
Category:	I.C
Keywords:	Government, Analysis, Aircraft, Modification, EMD, Integration, CER, Study

Title: Reengineering Aircraft Engine Cost Estimating Relationships (CERs)

Summary: Expand upon a previous research study that investigated using technical parameters, with engineering justification to drive cost, in simplified CERs for estimating engine development and production costs. Investigate possible parametric equations for predicting the cost of ASTOVL engines, derivative engines and turboprop engines.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
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Arlington, VA 22202-4306

Mr. Dan Nussbaum   (703) 604-0293

Performer: NCCA, In-House

Mr. Mark B. Daley   (703) 604-0312
Mrs. Karen Richey   (703) 604-0279

Resources:

	Dollars	Staff-years
FY 97		0.25
FY 98		0.25

Schedule: Start: June 1997

End: September 1998

Data Base: Historical data from military engine contractors.

Publications: Completed Study Report

Category: I.B, II.B, II.C, II.D

Keywords: Government, Analysis, Aircraft, Engine, EMD, Production, Labor, Material, Cost, Mathematical Model, Expert System, Demonstration/Validation, Study

Title: Aircraft System Integration Cost Database/Model

Summary: The purpose of this research is to develop a data base and parametric model that can be used to estimate the cost of integrating electronics and ordnance on aircraft. A database of historic cost data, as well as physical, performance and program data, will be used to develop cost estimating methodology.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
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Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Dan Nussbaum   (703) 604-0293

Performer: NCCA, In-House

Ms. Judy Hart   (703) 604-0311

Resources:	Dollars	Staff-years
FY 97		0.5
FY 98		0.5

Schedule: Start: FY 97

End: FY 98

Data Base: Historical costs from government and Navy contractors for various weapon systems installations.

Publications: Completed Study Report

Category: I.B, II.B, II.C, II.D

Keywords: Government, Estimating, Modification, Integration, Weapon Systems, EMD, Material, Labor, Cost, Data Collection, Data Base, Study

Title: Unmanned Aerial Vehicle (UAV) Data Base

Summary: The purpose of this research is to establish a data base which includes the technical characteristics and costs of UAVs currently in production and in development. The data base will include information on both air vehicle and ground station components.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Dan Nussbaum   (703) 604-0293

Performer: Contractor TBD

Resources: Dollars: FY 96: $50,000

Staff-years:

Schedule: Start: FY 96

End: FY 96

Data Base: UAV Cost/Technical Data Base

Publications: Completed Study Report

Category: II.C

Keywords: Estimating, EMD, Production, Data Collection, Data Base

Title:	Missile Government In-House Support Costs

Summary: Investigate how the government staffs its Systems Engineering/Program Management activity during the development and procurement phases. With respect to the procurement phase, research if and how the staffing level varies with competition and extremely low rate production.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Dan Nussbaum   (703) 604-0293

and

POE(T)

RADM Cook

Performer: NAVAIR 4.2, In-House

Captain John Fink   (703) 604-0308
Mr. Mark Daley   (703) 604-0279

Resources:	Dollars	Staff-years
FY 96		0.5
FY 97		0.5

Schedule: Start: FY 96

End: FY 97

Data Base: Government In-House Support Cost Database

Publications: Complete Study Report

Category: I.E

Keywords: Estimating, Missiles, Production, Data Collection, Data Base

Title: Production Cost Benchmark

Summary: The purpose of this task is to identify time dependent trends in cost per pound of missile assemblies stratified by function; i.e., "#/lb @ T1" vs. first year of production for heat-seeking air intercept missiles.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Dan Nussbaum   (703) 604-0293

Performer: NCCA, In-House

Resources: Dollars:

Staff-years: FY 00: 0.5

Schedule: Start: FY 00

End: FY 00

Data Base: Missile Production Costs

Publications: Completed Study Report

Category: II.A.2

Keywords: Estimating, Missiles, Production, Data Collection, Data Base

Title:	Government In-House Cost Study for Air-Launched Missiles

Summary: This report presents a database of production-phase government and contractor costs for the Sparrow, Sidewinder, Harm, and Phoenix programs. Data is tabulated for FY80-FY89 and includes information for foreign military sales cases. No system in the database has less than five consecutive years of information.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Dan Nussbaum (703) 604-0293

and

Naval Air Systems Command (4.2)
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Mr. William Stranges (703) 604-3688 x2563

Performer: MCR Service Group, Inc.

Small, McKeel, Vielbig, and Sferra (703) 820-4600

Resources: Dollars: FY 95: $60,000
Staff-years:

Schedule: Start: Complete
End:

Data Base: Excel Spreadsheet

Publications: MCR Report TR-9507/01

Category: II.B

Keywords: Government, Analysis, Missiles, Production, Data Collection, Time Series, Data Base, Study

Title:	MK 41 Vertical Launch System Cost Analysis

Summary: This study reports cost research for the Sea-Based Theater Ballistic Missile Defense System. It provides a technical description of vertical launch systems, development costs and the track of production contract prices.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Dan Nussbaum   (703) 604-0293

Performer: NSWC, Dahlgren

Mr. John Grey

and

Technomics, Inc.

Mr. Richardson

Resources: Dollars: FY 95: $50,000

Staff-years:

Schedule: Start: Complete
End:

Data Base: VLS Cost Database

Publications: NSWC, Dahlgren Report, # TBD

Category: II.D

Keywords: Industry, Weapon Systems, EMD, Production, Data Collection, Data Base, Study

Title: REVIC Calibration for Embedded, Ada and Non-Ada Projects

Summary: This report uses data presented in a MITRE Study (MTR1101) to develop revised coefficients for the REVIC Software Estimating Model. Thiel's JASA article "On the Use of Incomplete Prior Information in Regression Analysis" permits combining the default REVIC coefficients with the results of the current analysis.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Dan Nussbaum   (703) 604-0293

Performer: NCCA, In-House

Mr. Vernon Reisenleiter

Resources: Dollars:

Staff-years: FY 95: 0.17

Schedule: Start: Completed
End:

Data Base: None

Publications: NCCA Technical Report 002.95 and 003-95, January 1995

Category: II.D

Keywords: Analysis, Estimating, Weapon Systems, EMD, Survey, Statistics/Regression, CER, Study

Title: Analysis of the Relationship Between Development and Production Costs

Summary: This study will update and expand the scope of a completed (in FY94) NCCA in-house research effort to evaluate the relationship between development and production hardware costs. This relationship, generally referred to as a step-up or step-down factor, is used as a technique for estimating either Engineering and Manufacturing (EMD) hardware costs or Production hardware costs. The previous NCCA effort evaluated the step-up/step-down factors for a variety of missile, electronics and tracked vehicle programs. This update will incorporate additional programs and analysis of the relationship between Demonstration and Validation (D&V) and EMD hardware costs.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Dan Nussbaum   (703) 604-0293

Performer: NCCA, In-House

Resources: Dollars:

Staff-years: FY 97: 0.25

Schedule: Start: FY 97

End: FY 97

Data Base: None

Publications: TBD

Category: II.D

Keywords: Industry, Missiles, Electronic/Avionics, Land Vehicles, EMD, Production, Survey, Statistics/Regression, CER, Demonstration/Validation

Title: Linkage Between VAMOSC and the PPBS

Summary: The research will investigate and document the links between the historical, accounting cost data in VAMOSC and the planning and budgeting data in the PPBS. The goal is to establish tracking and potential consistency between the two systems in order to determine the completeness of the VAMOSC data and to allow VAMOSC to be used to do better planning and budgeting.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Carl Wilbourn   (703) 604-0310

Performer: Mathtech, Incorporated

Resources: Dollars: FY 96: $160,000

Staff-years:

Schedule: Start: April 1996

End: September 1996

Data Base: VAMOSC Ships, Air, Missile, and Torpedo Cost and Budget Data.

Publications: Final Report, Database improvements

Category: II.B

Keywords: Government, Operations and Support, Programming, Budgeting, Study

Title: Integration of Navy VAMOSC Data Base

Summary: Integration of the current weapon system Operating and Support (O&S) cost data into a relational database management system was initiated FY96 and will continue through FY97. Direct access to detailed and summary level data is planned. The current inefficient and incompatible system of batch processing and paper report distribution will be replaced with a Tier II client-server application.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
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Arlington, VA 22202-4306

Mr. Carl Wilbourn   (703) 604-0310

Performer: Information Spectrum, Incorporated

and

NCCA, In-House

CDR William Mickler, Jr.   (703) 604-0300

Resources:

	Dollars	Staff-years
FY 96	$1,000,000	1.5
FY 97	$700,000	1.5

Schedule: Start: October 1995

End: September 1997

Data Base: VAMOSC Ships, Air, Missile, and Torpedo Data

Publications: Documentation of System

Category: II.B

Keywords: Government, Operations and Support, Data Collection, Data Base

Title: Incorporation of Infrastructure Cost into the VAMOSC Database

Summary: This effort will investigate the types of infrastructure cost, determine sources for this cost data, determine how the costs can be incorporated into VAMOSC and allocate the costs to weapons system.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Carl Wilbourn   (703) 604-0310

Performer: Information Spectrum, Incorporated

Resources: Dollars: FY 96: $300,000

            Staff-years:

Schedule: Start: April 1996

            End: December 1996

· Data Base: VAMOSC Ships, Air, Missile, and Torpedo Data

Publications: TBD

Category: II.B

Keywords: Government, Operations and Support, Infrastructure

Title: Expansion of VAMOSC Shipboard Systems Database

Summary: This effort will expand the VAMOSC Shipboard Systems cost database by ten systems; including electronics, launching, and gun systems.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
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Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Carl Wilbourn   (703) 604-0310

Performer: Information Spectrum, Incorporated

Resources: Dollars: FY 96: $100,000

Staff-years:

Schedule: Start: June 1996

End: December 1996

Data Base: VAMOSC Shipboard Systems

Publications: VAMOSC Shipboard Systems Report

Category: II.B

Keywords: Government, Operations and Support, Ships, Data Collection, Data Base

Title:	Price Indices for Computers

Summary: This research will attempt to develop price indices for computers of different sizes such as PCs, mainframes, and CRAYs. First, relevant literature will be reviewed, such as work by Griliches at the National Bureau of Economic Research. Data will be gathered and indices developed.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Dr. Brian Flynn   (703) 604-0301

Performer: NCCA, In-House

Dr. Brian Flynn   (703) 604-0301
Mr. Harold Dagel   (703) 604-0314

Resources:

	Dollars	Staff-years
FY 96		0.2
FY 97		0.8

Schedule: Start: September 1996

End: May 1997

Data Base: TBD

Publications:

Category: II.A.1

Keywords: Government, Estimating, Electronics/Avionics, Study

Title: Software Metrics Data Collection and Analysis for High Performance Computing Environments

Summary: This research will attempt to collect software metrics data from the Common High Performance Computing Software Support Initiative. About 47 individual projects will be monitored in eight major computational areas. Descriptions of both the quantitative and qualitative aspects of the data base will provided. Software size, schedule, and productivity measures will be monitored and analyzed on a periodic basis during a three year developmental period which began January 1996.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
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Dr. Brian Flynn   (703) 604-0301

and

DoD High Performance Computing Program Office
1110 North Glebe Road, Suite 650
Arlington, VA 22202-4306

Dr. Roger Foster   (703) 812-8205

Performer: NCCA, In-House

Mr. Stephen Gross   (703) 604-0277

Resources:

	Dollars	Staff-years
FY 96		0.25
FY 97		0.50
FY 98		0.50
FY 99		0.25

Schedule: Start: May 1996

End: May 1999

Data Base:

Title: Use of a Partial Adjustment Model for Explaining Changes in Overhead Rates

Summary: This research investigates the use of a "partial adjustment" model for explaining changes in overhead rates at selected US shipyards. The underlying premise of the model is that firms have some desired level of overhead associated with a particular level of direct base. Further, firms need more than one year to adjust actual levels to desired levels because of market, cultural, and institutional constraints.

Classification: Business Sensitive

Sponsor: Naval Center for Cost Analysis
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    Dr. Brian Flynn   (703) 604-0301

Performer: NCCA, In-House

    Dr. Brian Flynn   (703) 604-0301
    Mr. Harold Dagel   (703) 604-0314

Resources: Dollars:

    Staff-years: FY 95: 0.75

Schedule: Start: Completed

    End:

Data Base: Historical data on direct and indirect costs at several shipyards

Publications: Written Report

Category: I.B.2

Keywords: Industry, Estimating, Ships, Overhead/Indirect, Economic Analysis, Mathematical Model

Title: MADCAM (Microwave and Digital Cost Analysis Model)

Summary: Estimates the T1 cost of electronics boxes in FY90 as a function of their distinguishing design characteristics and the technology of the components. Task began in 1992 under an Air Force contract, and then taken under Navy sponsorship in late 1994. The model is in its fourth release, and is called "MADCAM 96." It contains 83 data points comprised of 24 space applications, 14 air and 25 surface applications.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. John E. Zamarra   (703) 602-5770

Performer: Tecolote Research, Inc.

Mr. Brad Frederic
Mr. Bill Jago

Resources: Dollars: FY 95: $81,700

Staff-years:

Schedule: Start: September 1995

End: February 1996

Data Base: Electronic Boxes

Publications: "MADCAM 96 (Microwave and Digital Cost Analysis Model) Presentation Document, 29 February 1996

Category: I.B.1

Keywords: Government, Estimating, Missiles, EMD, Manufacturing, Data Collection, Computer Model

Title: Commercial Off the Shelf (COTS) Electronics Cost and Technical Data Base

Summary: The report contains technical and cost information, with company product identification and point of contact and EXCEL spreadsheets for the following electronic components: analog/digital converters, application specific integrated circuits (ASICs), computer systems, CPU boards and chips, digital signal processor boards and chips, field programmable gate arrays (FPGAs), input devices, infrared sensors, mass storage devices, multichip modules (MCMs), memory chips, MMIC chips, power supplies, software, and transmit/receive (T/R) modules. Cost data is incomplete in selected areas due to reluctance of vendors to release price lists for complete lines of products.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. John E. Zamarra   (703) 602-5770

Performer: LSA, Inc.

Mr. Rick Osseck

Resources: Dollars: FY 95: $34,000

Staff-years:

Schedule: Start: September 1995

End: February 1996

Data Base: Electronic Boxes

Publications: "Commercial Off the Shelf (COTS) Electronics Cost and Technical Data Base," Draft Final Report, May 9, 1996

Category: II.A.1

Keywords: Government, Estimating, Data Collection, Computer Model

AIR FORCE COST ANALYSIS AGENCY

Name	Air Force Cost Analysis Agency (AFCAA)
Address	1111 Jefferson Davis Highway, Suite 403 Arlington, VA 22202-4306
Director	Colonel Greg McKillop Phone: (703) 602-7431 Fax: (703) 604-6646

Size

Professional:	52 (authorized)
	46 (assigned)
Support:	2
Consultants:	0
Subcontractors:	0

Focus

Field Operating Agency (FOA) responsible to the Air Force Assistant Secretary (Financial Management/Comptroller) for independent life-cycle cost analyses of major weapon system programs. Selectively-manned operations support unit to Headquarters USAF. Develops costing methods, models and databases and derives reliable cost estimates, then advises AF and OSD senior leaders on budget, resource allocation, program, and acquisition milestone decisions.

Activity

Number of projects in process:	21
Average duration of a project:	1 year
Average number of staff members assigned to a project:	1
Average number of staff-years expended per project:	0.2
Percentage of effort conducted by consultants:	90%
Percentage of effort conducted by subcontractors:	0%

Title: Communications Payload Data Collection and DB Development

Summary: This project involves the data collection and database development for space communications payloads. The communications payload will include all frequency, e.g., UHF, SHF, EHF, and all other frequencies. The contractor will collect the data from existing data packages and new sources. The database will provide the necessary data to estimate future communications payloads.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: TASC, Inc./MCR

Resources: $165,000

Schedule: Start: September 1995

End: September 1996

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Estimating, Analysis, Life Cycle, Readiness, Data Collection, Data Base, Mathematical Modeling, CER, Computer Model, Statistics/Regression,

Title:	Launch Vehicle Cost Model (Below-the-Line CERs)
Summary:	This is a follow-on project. The first phase of LVCM developed hardware only CERs. Data were collected from Delta, Titan, and Atlas launch vehicles. This follow-on develops below-the-line items, such as System Engineering/Program Management, Data, Training, etc.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency
Performer:	Tecelote Research, Inc.
Resources:	$166,000
Schedule:	Start: June 1995
	End: Apr 96
Database:	TBD
Publications:	TBD
Category:	II.A.2
Keywords:	Government, Space Systems, Estimating, Analysis, Life Cycle, Readiness, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Computer Model

Title: Space Cost Driver Research Study

Summary: This project examines the nature of high tech/low production cost relationships. The study examines in detail the three cost categories: production, engineering, and overhead. It is suggested that in the high tech/low cost scenario, production cost are comparatively minimal and have a diminished relationship to all other cost. It is further suggested that focusing on the production process realizes relatively minimal cost benefit in terms of total cost.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: In-house effort (AFCAA)

Resources: $0 (some TDY funds; in-house manpower)

Schedule: Start: June 1995

                End: September 1996

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Space Systems, Estimating, Analysis, Life Cycle, Readiness, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Computer Model

Title:	Sensor Payload Data Collection and DB Development
Summary:	This project involves the data collection and database development for space sensor payloads. The contractor will collect the data from existing data packages and new sources. The database will provide the necessary data to estimate future sensor payloads.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency
Performer:	TASC, Inc.
Resources:	$153,000
Schedule:	Start: September 1995
	End: September 1996
Database:	TBD
Publications:	TBD
Category:	II.A.2
Keywords:	Government, Estimating, Space Systems, Analysis, Life Cycle, Readiness, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Computer Model

Title: Space System Database Consolidation (Phase II)

Summary: This project involves the re-normalizing of several of the current space system data packages based on the Phase I NASA/AF standard database WBS and normalization procedures. This project is essential to the completion of the goal to achieve overall consistency in current and future satellite databases. The effort will include narrative summary of each data point (program resume), a description of relevant technical and physical parameters, detailed data spreadsheets with raw data and normalized data. Phase III of this project will add new data packages.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: Tecelote Research Inc.

Resources: $125,000

Schedule: Start: June 1996

End: December 1996

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Estimating, Space Systems, Analysis, Life Cycle, Readiness, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Computer Model

Title:	NAFCOM Phase I
Summary:	The project develops and integrates specific AF requirements into the database and NASA Cost Model (NASCOM). The incorporation of AF requirements allows data and cost estimates to be displayed, analyzed, and used in a manner compatible with AF terminology and costing procedures. Phase II completes the delivery of NAFCOM and incorporates the capability to estimate launch vehicle and provides other updates to the databases.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency
Performer:	NASA and SAIC
Resources:	TBD
Schedule:	Start: June 1996
	End: December 1996
Database:	TBD
Publications:	TBD
Category:	II.A.2
Keywords:	Government, Estimating, Space Systems, Analysis, Life Cycle, Spares/Logistics, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Computer Model

Title: Feasibility Study: Streamlined Acquisition Cost—Phase I

Summary: This study examines the feasibility of capturing the cost impact of space acquisition reform, streamlining, and "new ways of doing business." Can we capture all the acquisition reform, streamlining, and "new ways of doing business" so that cost models and estimates reflect the new acquisition environment? This study will also provide recommendations for a follow-on effort to develop adjustment techniques, mechanism, processes, and methodologies that will be applied to cost models (payload, bus, launch vehicle) or be embedded in existing CERs.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: TASC, Inc.

Resources: TBD

Schedule: Start: June 1996

End: August 1996

Database: TBD

Publications: TBD

Category: I.A

Keywords: Government, Estimating, Space Systems, Analysis, Life Cycle, Readiness, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Computer Model

Title:	Launch Vehicle Cost Model (LVCM)—Decrement and Launch Operations

Summary: The objective is to develop decrement mechanisms for Below-the-Line CERs initiated under the previous task (Launch Vehicle Common Practices and LVCM—Expansion and Maintenance); modify existing LVCM CERs to accommodate decrement mechanisms; and expand LVCM to include the Launch Operations WBS element. The current LVCM embodies "business-as-it-is" development and production practices. The intent of this effort is to provide a frame of reference for estimating the possible cost impacts of proposed adjustments.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: Tecelote Research Inc.

Resources: $150,000

Schedule: Start: May 1996

End: September 1996

Database: TBD

Publications: TBD

Category: I.A

Keywords: Government, Estimating, Space Systems, Analysis, Life Cycle, Readiness, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Computer Model

Title: Booster/Payload Interface Standard

Summary: This project will analyze the cost impact of standardizing the interface between the booster and the payload industry-wide in anticipation of Evolved Expendable Launch Vehicle (EELV) development. To achieve cost reduction and streamlining, standardization of boosters and payload interfaces will be common place. The project will consider the industry and DoD impacts of accommodating the standardization from the booster and the payload perspective. It will encompass the pre-EMD, EMD, and Production phases.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: TBD

Schedule: Start: August 1996

End: February 1997

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Estimating, Space Systems, Analysis, Life Cycle, Spares/Logistics, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Computer Model

Title:	Streamlined Acquisition Cost Study—Phase II

Summary: Follow-on project to examine the cost impact and the factoring of streamlined acquisition. This is the quantification of acquisition reform into the cost models. It will examine Mil-Spec applications for contractors and subs, program h/w procurement routines, CAE/CAD/CAM applications, management information network, contract changes, implementation of commercial manufacturing and quality controls, reduction of program reviews and reporting, parts application flexibility, automated test data handling systems, reduction of government micro-management, design-to-cost potentials, contract type, multi-year procurement, combined build concepts, and long lead parts procurement.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: TBD

Schedule: Start: August 1996

End: February 1997

Database: TBD

Publications: TBD

Category: I.A

Keywords: Government, Estimating, Analysis, Life Cycle, Readiness, Data Collection, Data Base, Mathematical Modeling, Computer Model, Statistics/Regression, CER

Title:	NAFCOM Phase II

Summary: The project is a follow-on to NAFCOM Phase I. Phase I developed and integrated specific AF requirements into the database and NASA Cost Model (NASCOM). The incorporation of AF requirements allowed data and cost estimates to be displayed, analyzed, and used in a manner compatible with AF terminology and costing procedures. Phase II completes the delivery of the NAFCOM, associated documentation to the AF, and the incorporation of the launch vehicle information.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: NASA and SAIC

Resources: TBD

Schedule: Start: December 1996

End: June 1997

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Space Systems, Estimating, Analysis, Life Cycle, Spares/Logistics, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Computer Model

Title:	Re-Engineering Space Cost Estimating
Summary:	This project will examine the process of space cost estimating. This effort specifically addresses the current space cost estimating methodology and the re-engineering of space cost estimating. This re-engineering is necessary to increase the ability and capability of the AFCAA to conduct Component Cost Analyses. By this effort, the AFCAA will improve the process of cost estimating. The project will address hardware estimating methodology, functional estimating, activity estimating (activity based costing), schedule-cost estimating and other methodologies. (This is NOT the re-engineering or re-visit of the space acquisition associated with streamlining).
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency
Performer:	TBD
Resources:	TBD
Schedule:	Start: October 1996
	End: April 1997
Database:	TBD
Publications:	TBD
Category:	II.A.2
Keywords:	Government, Space Systems, Estimating, Analysis, Life Cycle, Spares/Logistics, Data Collection, Data Base, Mathematical Modeling, CER, Mathematical Model, Statistics/Regression, Computer Model

Title: Space System Database Consolidation (Phase III)

Summary: This project is the last Phase of a three-phased effort. Phase I of this project established the standard WBS and cost data normalization procedures. Phase II used the NASA/AF common database WBS and normalization procedures to establish spreadsheet-zero and renormalize two of the current space system data packages. Phase II included narrative summary of each data point (program resume), a description of relevant technical and physical parameters, and detailed data spreadsheets with raw data, and normalized data. Phase III of this project will add new data packages using the same processes as used in Phase II.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: TBD

Schedule: Start: February 1997

End: August 1997

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Estimating, Analysis, Space Systems, Life Cycle, Readiness, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Computer Model

Title: Common Bus Data Collection

Summary: This project involves the data collection on satellite common bus. Common bus will be/may be the industry norm to place specific payloads into orbit. Data collection will involve the collection of past and current common bus, both commercial and DoD satellites. The data collected will be consistent with the NASA/AF standard WBS and standard normalization procedures.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: TBD

Schedule: Start: October 1996

End: April 1997

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Estimating, Analysis, Space Systems, Life Cycle, Readiness, Data Collection, Data Base, Mathematical Modeling, CER, Computer Model, Statistics/Regression

Title: Launch Vehicle (Booster) Database Update

Summary: This project will update the database used in the Launch Vehicle Cost Model and update/develop cost estimating relationship (CERs) from the cost databases. It will provide the cost estimating tools to estimate accurately launch vehicles. The CERs will be tested against actual data for validation and reasonableness.

Classification: TBD

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: TBD

Schedule: Start: November 1996

End: May 1997

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Space Systems, Estimating, Analysis, Life Cycle, Spares/Logistics, Data Collection, Data Base, Mathematical Modeling, Computer Model Statistics/Regression, CER, Mathematical Model

Title:	Strategic/Navigational/Weather/Crosslinks Payload Data Collection Update
Summary:	This project will update the database for various payloads, such as, strategic (DSP-like), navigational (GPS-like), weather (DMSP-like), and crosslinks. It will provide the database to develop cost estimating relationships (CERs) and cost estimating crosschecks.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency
Performer:	TBD
Resources:	TBD
Schedule:	Start: December 1996
	End: July 1997
Database:	TBD
Publications:	TBD
Category:	II.A.2
Keywords:	Government, Space Systems, Estimating, Analysis, Life Cycle, Spares/Logistics, Data Collection, Data Base, Mathematical Modeling

Title: New Technology Cost Study

Summary: This project will consider the cost impact of new technology. In the fast changing space environment, examination of emerging technology is necessary to maintain the utility of cost model. Some areas to be examined will include: MMIC, GaAs, NiH, and composites.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: TBD

Schedule: Start: January 1997

End: July 1998

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Advanced Technology, Space Systems, Estimating, Analysis, Life Cycle, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression

Title:	Space-Environmental Cost Study
Summary:	This project will study the cost impact of environmental concerns in space systems. It will focus primarily on costs associated with cleanup, containment, and handling of environmentally sensitive chemicals and hazardous materials.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency
Performer:	TBD
Resources:	TBD
Schedule:	Start: October 1997 End: March 1998
Database:	TBD
Publications:	TBD
Category:	II.A.2
Keywords:	Government, Environment, Advanced Technology, Space Systems, Estimating, Analysis, Life Cycle, Data Collection, Data Base, Mathematical Modeling, Statistics

Title: Wide Area Network (WAN) Database

Summary: This project will examine the feasibility of CONUS wide sharing of cost database. With the consolidation and cross sharing of cost database to achieve cost synergy, availability and access will be examined through the use of Wide Area Network. It will consider the cost, infrastructure, operations, and security of establishing a WAN database among the space cost community. .

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: TBD

Schedule: Start: November 1997

End: March 1998

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Advanced Technology, Space Systems, Estimating, Analysis, Life Cycle, Data Collection, Data Base, Mathematical Modeling, Statistics

Title: Common Bus CER Development

Summary: This project will develop the cost estimating relationship (CERs) for the common bus segment of space. It will update/collect data and develop CERs to estimate common bus costs. Given the emerging environment of common bus usage for multiple payloads, the development of a database and CER is essential to future cost estimating capability.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: TBD

Schedule: Start: December 1997

End: June 1998

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Space Systems, Estimating, Analysis, Life Cycle, Spares/Logistics, Data Collection, Data Base, Mathematical Modeling, Computer Model, Statistics/Regression, CER, Mathematical Model

Title: Business Base Impact Cost Study Follow-on

Summary: This project will re-examine the cost impact of the changing business base due to industry strategization, mergers, DoD downsizing and other economic environment. It will examine several major aerospace corporations' experiences and corporate strategies. This project will help the estimating process by reflecting the current state of corporate business base decisions.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: TBD

Schedule: Start: January 1998

End: June 1998

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Overhead/Indirect, Space Systems, Estimating, Analysis, Spares/Logistics, Life Cycle, Data Collection, Data Base, Mathematical Modeling, Statistics

Title: Ground Segment WBS/CER Development

Summary: This project will standardize the WBS definition, identify cost drivers, and collect necessary data to update existing government databases and test the relevancy of cost drivers. This effort will concentrate on existing useable government databases. This effort is essential to provide the independent capability to estimate the ground segment of the total space architecture.

Classification: TBD

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: TBD

Schedule: Start: October 1998

End: June 1999

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Space Systems, Estimating, Analysis, Life Cycle, Data Collection, Data Base, Mathematical Modeling, Statistics

Title: EHF Communication Payload Database Update

Summary: This project will update EHF communication payload cost data for creating a database for the development of cost estimating relationships (CER). The project will examine EHF payloads, such as Milstar, UFO, and other applicable programs.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: TBD

Schedule: Start: November 1998

End: July 1999

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Electronics/Avionics, Space Systems, Estimating, Analysis, Life Cycle, Data Collection, Data Base, Mathematical Modeling, Statistics

Title: Launch Database Update 99

Summary: This project will collect new cost data on launch segment of space. It will add to the existing government cost database (Launch Vehicle Cost Model, March 95). It will serve as a database to update the cost estimating relationships. Collection will encompass all DoD and commercial launchers.

Classification: TBD

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: TBD

Schedule: Start: December 1998

End: August 1999

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Space Systems, Estimating, Analysis, Life Cycle, Data Collection, Data Base, Mathematical Modeling, Statistics

Title: Space Database Update 2000

Summary: This project will update the consolidated space database. It will encompass a wide range of databases, i.e., bus, payloads, launchers, ground. It will be the main repository of all other databases. This will also be crossfed to other space agencies, i.e., NASA, SMC.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: TBD

Schedule: Start: October 1999

End: June 2000

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Space Systems, Estimating, Analysis, Life Cycle, Data Collection, Data Base, Mathematical Modeling, Statistics

Title: Space Estimating Methodology Update 2000

Summary: This project will examine space cost estimating methodologies to take into account the changing technology, economic environment (including corporate strategies, accounting changes, electronic media changes, CCDR format/availability changes, and policies). It will cover any new datapoints, or programs. It will provide the database to develop CERs.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: TBD

Schedule: Start: November 1999

End: July 2000

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Space Systems, Estimating, Analysis, Life Cycle, Data Collection, Data Base, Mathematical Modeling, Statistics

Title: Strategic/Navigational/Weather/Crosslinks Payload Data Collection

Summary: This project will collect new payload cost data on strategic (DSP-like), navigational (GPS-like), weather (DMSP-like), and crosslinks. It will update the database to develop cost estimating relationships (CERs) and cost estimating crosschecks.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: TBD

Schedule: Start: December 1999

End: August 2000

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Space Systems, Estimating, Analysis, Life Cycle, Spares/Logistics, Data Collection, Data Base, Mathematical Modeling, Statistics

Title: Multinational Satellite Cost Study

Summary: This project will examine the cost estimating issues in developing and manufacturing multinational satellites. It will cover the efficiencies and inefficiencies associated with multinational cooperation of satellite construction.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: TBD

Schedule: Start: October 2000

End: June 2001

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Space Systems, Estimating, Analysis, Life Cycle, Spares/Logistics, Data Collection, Data Base, Mathematical Modeling, Statistics

Title:	Bus CER Update and Development
Summary:	This project will update the existing bus database and cost estimating relationship (CER). This will bring the CER current with the latest existing technology and cost impacts.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency
Performer:	TBD
Resources:	TBD
Schedule:	TBD
Database:	TBD
Publications:	TBD
Category:	II.A.2
Keywords:	Government, Space Systems, Estimating, Analysis, Life Cycle, Spares/Logistics, Data Collection, Data Base, Mathematical Modeling, Statistics

Title: Ground Segment Database Update

Summary: This project will update the existing government cost database which will be the basis of cost estimating relationship (CER) development. This will reflect the latest information available for the ground segment.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: TBD

Schedule: Start: December 2000

End: August 2001

Database: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Space Systems, Estimating, Analysis, Life Cycle, Spares/Logistics, Data Collection, Data Base, Mathematical Modeling, Statistics

Title: Missiles and Munitions O&S Data Collection and CER Development

Summary: This project involves developing a missiles and munitions Operating and Support database, linking available databases to O&S estimating models and developing CERs for estimating O&S.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Performer: TASC, Inc.

Resources: $180,000

Schedule: Start: January 1996

End: December 1996

Database: TBD

Publications: TBD

Category: II.A.1, II.A.2

Keywords: Government, Estimating, Analysis, Life Cycle, Data Collection, Data Base, Missiles, Statistics/Regression, CER, Computer Model

Title:	Munitions Seeker Data Collection
Summary:	The objective of this project is to develop a technical and cost data base on new munitions using new seeker technology (IR Focal Plane Array, millimeter wave, dual mode seekers, synthetic aperture array, K-band RF, etc.). This will insure estimators have data to perform estimates on weapon systems with new seeker technology. Sources of data, validation efforts, and normalization rationale will be completely documented.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency
	Ms. Theresa O'Brien (703) 604-0394/DSN 664-0394
Performer:	TASC, Inc.
Resources:	FY 96: $150,000
Schedule:	Start: June 1996
	End: February 1998
Data Base:	TBD
Publications:	TBD
Category:	II.A.1
Keywords:	Government, Analysis, Electronics/Avionics, Missiles, Data Base, EMD, Production, Labor, Materials, Data Collection

Title: Missiles ACDB Update

Summary: The objective of this project is to collect the necessary data to perform periodic updates of the Automated Cost Data Base (ACDB) to include the latest data on programs such as JDAM, AIM-9X and Sensor Fused Weapon. Update ACDB with the new data.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Financial Management Missiles

Performer: TBD

Resources: TBD

Schedule: Start: October 1997, October 1999

End: May 1998, May 2000

Data Base: Automated Cost Data Base (ACDB)

Description: Missiles and Munitions systems data

Automation: PC in FoxPro

Publications: TBD

Category: II.A.1

Keywords: Government, Analysis, Programming, Forces, Mathematical Modeling, Computer Model, Life Cycle, Labor, Materials, Data Collection, Data Base, Missiles

Title: Missiles SE/PM CER Development

Summary: The objective of this project is to take data from the Automated Cost Data Base (ACDB) and other sources and develop CERs to estimate SE/PM costs for missile/munitions programs in development as well as production.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency
Financial Management Missiles

Performer: TBD

Resources: FY 99: TBD

FY 01: TBD

Schedule: Start: October 1998, October 2000

End: April 1999, April 2001

Data Base: Automated Cost Data Base (ACDB)

Description: Missiles and munitions systems data
Automation: PC in FoxPro

Publications: TBD

Category: II.A.2, II.B

Keywords: Government, Analysis, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Computer Model, Missiles

Title: Munitions/Seeker CER Development

Summary: The objective of this project is to use data from Munitions Seeker Data Collection (funded and delivered in FY 96) to develop Cost Estimating Relationships to estimate the development and production of seeker components.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Financial Management Missiles

Performer: TBD

Resources: FY 99: TBD

Schedule: Start: October 1998

End: March 1999

Data Base: TBD

Publications: TBD

Category: II.A.2, II.B

Keywords: Government, Analysis, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Missiles, Labor, Material, Overhead/Indirect

Title:	Missiles ST&E CER Development
Summary:	The objective of this project is to take data from the Automated Cost Data (ACDB) and other sources and develop regressions to estimate ST&E costs for missile/munitions programs in development as well as production.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency
	Financial Management Missiles
Performer:	TBD
Resources:	FY 99: TBD
	FY 01: TBD
Schedule:	Start: October 1998, October 2000
	End: April 1999, April 2001
Data Base:	TBD
Publications:	TBD
Category:	II.A.2, II.B
Keywords:	Government, Analysis, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Missiles, Labor, Overhead/Indirect, Material

Title:	Missiles O&S CER Update
Summary:	The objective of this project is to update the report from the FY 95 data collection and CER effort for Missiles and Munitions Operating and Support Costs.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency
	Financial Management Missiles
Performer:	TBD
Resources:	FY 02: TBD
Schedule:	Start: October 2001
	End: October 2002
Data Base:	TBD
Publications:	TBD
Category:	II.A.2, II.B
Keywords:	Government, Analysis, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Operating and Support, Missiles

Title: Avionics Systems Data Collection

Summary: The objective of this project is to update/develop a historical avionics database to allow analysts to better understand and apply the data during subsequent cost estimating relationship (CER) development. Cost, technical, and programmatic data from the population of US military weapons with on-board avionics systems, including those with integrated avionics architecture (vice federated) will be collected. The data will be validated and normalized. Sources of data, validation efforts, and normalization rationale will be completely documented. This project is a continuation of a research effort undertaken with FY 94 funds.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Major Roy Clayton   (703) 602-4097/DSN 332-4097

Performer: TASC, Inc.

Resources: FY 94: $275,000

FY 95: $250,000

Schedule: Start: FY 94 effort delivered: January 1995

End: FY 95 Follow-on delivery: August 1996

Data Base: The avionics systems data is contained in the Automated Cost Database (ACDB) module of ACE IT. The data includes cost, programmatic and technical information generally at the LRU level. The following systems are included in the database: APG 65, APG 66, APG 68, APG 70, APG 71, APG 73, ICAAS, AAQ 13, AAQ 14, ALR 67, ALR 56M, ALR 56C, ALQ 165, ALQ 135 and AYK 14.

Publications: TBD

Category: I.B, I.D, II.A, II.B

Keywords: Government, Analysis, Electronics/Avionics, EMD, Production, Labor, Materials, Data Collection, Data Base

Title: Multi-Aircraft Database Normalization

Summary: The objective of this project is to normalize and fully document previously collected Air Force and Navy cost and technical data. The database will be flexible enough to allow for either an analogy-based or CER-based approach for both recurring and non-recurring costs of aircraft systems. The database will contain functional hourly and cost information, as well as, technical information for each hardware WBS element. Sources of data and normalization rationale will be completely documented. This project is a continuation of a research effort undertaken with FY 93 funds.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Tina Colarossi   (703) 602-9324/DSN 332-9324

Performer: Tecelote Research, Inc.

Resources: FY 96: $225,000

Schedule: Start: March 1996

End: March 1997

Data Base: TBD

Publications: TBD

Category: I.B, I.D, II.A, II.B

Keywords: Government, Analysis, Estimating, Aircraft, Airframe, EMD, Production, Labor, Materials, Data Collection, Data Base

Title:	WRAP Rate Study
Summary:	The objective of this project is to understand and document historical and current methodologies used to calculate fully- loaded labor (WRAP) rates for a variety of prime aircraft manufacturers. This effort will allow normalization of current WRAP rates to the historical data underlying an estimate; it will also allow normalization of the historical cost data to reflect current WRAP rate calculations.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency
	TBD
Performer:	TBD
Resources:	TBD
Schedule:	Start: March 1998
	End: March 1999
Data Base:	TBD
Publications:	TBD
Category:	I.B, I.D, II.A, II.B
Keywords:	Government, Analysis, Estimating, Aircraft, Production, Labor, Materials, Data Collection, Data Base

Title: Overhead Primer

Summary: The objective of this project is to provide a primer discussing methods of measuring and predicting business base changes for a prime weapon system contractor; then describing how to calculate alternate overhead rates given different assumptions of that contractor's future business base.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

TBD

Performer: TBD

Resources: TBD

Schedule: Start: March 1998

End: March 1999

Data Base: TBD

Publications: TBD

Category: I.B, I.D, II.A, II.B

Keywords: Government, Analysis, Estimating, Aircraft, Production, Labor, Materials, Data Collection, Data Base

Title: Composite/Exotic Materials Database

Summary: The objective of this project is to update/develop a historical composite/exotic materials database to allow analysts to better understand and apply the data during subsequent cost estimating relationship (CER) development. Cost, technical, and programmatic data for various weapon systems will be collected. The data will be validated and normalized. Sources of data, validation efforts, and normalization rationale will be completely documented. This project is a continuation of a research effort undertaken with FY 94 funds.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Deborah Cann   (703) 604-0402/DSN 664-0402

Performer: Tecelote Research, Inc.

Resources: FY 94: $150,000

FY 96: $228,000

Schedule: Start: FY 94 effort delivered: December 1994

End: FY 96 Follow-on delivery: March 1997

Data Base: FOXPRO based database run out of ACDB. Provides detailed cost, technical and programmatic data on the following systems: AV-8B, F/A-18, F-22, B-2, V-22 and A-6.

Publications: 20 binders of raw data and 1 book summarizing efforts and results.

Category: I.D, II.A, II.B, II.D

Keywords: Government, Estimating, Analysis, Aircraft, Airframe, Data Base

Title: O&S Cost Estimating Relationships (CERs) Development for Support Equipment

Summary: Project includes developing CERs for estimating Life-Cycle-Costs of support equipment for future weapon systems. These CERs will provide alternative methodologies for use in developing CCAs.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Major Mel Robertson   (703) 604-0401/DSN 664-0401

Performer: TBD

Resources: TBD

Schedule: Start: November 1998

End: December 1999

Data Base: TBD

Publications: TBD

Category: II.A, II.B

Keywords: Government, Estimating, Analysis, Aircraft, Spares/Logistics, Life Cycle, Readiness, Data Collection, Mathematical Modeling, Statistics/Regression, CER, Data Base, Mathematical Model, Computer Model

Title: Aircraft Engine Database

Summary: Joint project between AFCAA and Naval Air Systems Command. Project includes collection and analysis of cost, technical, and programmatic data for the development of an engine database as well as the development of engine cost estimating relationships (CERs). These CERs will provide alternative methodologies for use in developing CCAs.

Classification: Unclassified

Sponsor: Naval Air Systems Command

Al Pressman   (703) 604-3440 x2663

Air Force Cost Analysis Agency

Tina Colarossi   (703) 602-9324/DSN 332-9324

Performer: KETRON

Resources: FY 95: $340,000 ($200,000 AFCAA funded)

Schedule: Start: November 1995

End: November 1996

Data Base: TBD

Publications: TBD

Category: I.B, II.A, II.B

Keywords: Government, Estimating, Analysis, Aircraft, Engine, Life Cycle, Data Collection, Mathematical Modeling, Mathematical Model, Statistics/Regression, CER, Data Base, Computer Model

Title:	Composite Material Support Cost Database

Summary:	The objective of this project is to attempt to determine, using historical data, whether additional support costs are incurred (and their magnitude) because of the use of composite/exotic materials. A database of support costs specific to composite materials will be developed. This will allow analysts to better understand and apply the data during subsequent cost estimating relationship (CER) development. Support cost information for various weapon systems employing high percentages of composite materials will be collected. The data will be validated, normalized, and compared to support costs for conventional materials. Sources of data, validation efforts, and normalization rationale will be completely documented.

Classification:	TBD
Sponsor:	Air Force Cost Analysis Agency
	TBD
Performer:	TBD
Resources:	TBD
Schedule:	Start: October 1998
	End: December 1999
Data Base:	TBD
Publications:	TBD
Category:	I.A, I.B, II.B, II.C
Keywords:	Government, Estimating, Analysis, Aircraft, Airframe, Life Cycle, Spares/Logistics, Readiness, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Mathematical Model, Computer Model

Title:	Aircraft Modification Programs Study

Summary: This effort seeks to identify publications relating to aircraft modification, previously collected cost data, and possible sources of cost data not yet collected. These publications and data will include descriptions and costs (in the greatest detail possible) associated with airframe structural modification and engine, avionics, and/or munitions modification tasks. Specific types of tasks may include modification integration, software updates, maintainability and reliability testing and flight testing of the modified system, installation, design, manufacture, and other collateral efforts.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

LtCol Dianne Jinwright   (703) 602-9317/DSN 332-9317

Performer: TASC, Inc.

Resources: TBD

Schedule: Start: December 1996

End: December 1997

Data Base: TBD

Publications: TBD

Category: I.A, I.B, II.B, II.D

Keywords: Government, Estimating, Analysis, Aircraft, Commercial, Modifications, Study

Title:	Aircraft Database Study Follow-On
Summary:	Collect, analyze, and organize historical cost data for the following aeronautical programs: C-5, C-17, B-1, B-2, F-22, JSTARS.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency
	Tina Colarossi (703) 602-9324/DSN 332-9324
Performer:	TBD
Resources:	TBD
Schedule:	Start: December 1997
	End: December 1998
Data Base:	TBD
Publications:	TBD
Category:	I.D, II.A
Keywords:	Government, Estimating, Analysis, Life Cycle, Data Collection, Mathematical Modeling, Statistics/Regression, CER, Data Base, Computer Model

Title:	O&S Cost Estimating Relationships (CERs) Development for DLRs, PDM and Engine Overhaul
Summary:	Project includes CERs for estimating costs of depot level reparables, programmed depot maintenance and jet engine overhaul for future weapon systems. These CERs provide alternative methodologies for use in developing CCAs.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency
	Major Mel Robertson (703) 604-0401/DSN 664-0401
Performer:	Logistics Management Institute (LMI)
Resources:	FY 94: $205,000
Schedule:	Start: FY 94 effort delivered: November 1995
Data Base:	N/A
Publications:	N/A
Category:	II.A, II.B
Keywords:	Government, Estimating, Analysis, Aircraft, Spares/Logistics, Life Cycle, Readiness, Data Collection, Mathematical Modeling, Statistics/Regression, CER, Data Base, Mathematical Model, Computer Model

Title:	O&S Cost Estimating Relationships (CERs) Development for BMS and Sustaining Engineering
Summary:	Project includes developing CERs for estimating costs of base maintenance supplies and sustaining engineering for future weapon systems. These CERs will provide alternative methodologies for use in developing CCAs.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency
	TBD
Performer:	TBD
Resources:	TBD
Schedule:	Start: December 1999
	End: December 2000
Data Base:	TBD
Publications:	TBD
Category:	II.A, II.B
Keywords:	Government, Estimating, Analysis, Aircraft, Spares/Logistics, Life Cycle, Readiness, Data Collection, Mathematical Modeling, Statistics/Regression, CER, Data Base, Mathematical Model, Computer Model

Title: C3 Platform Integration Database

Summary: Project is to build a database and develop CERs to improve our ability to estimate the costs of integrating C3 systems into existing airborne and ground platforms.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Captain Stu Dornfeld

Performer: MCR

Resources: FY 95: $120,000

FY 96: $100,000

Schedule: Start: September 1995

End: May 1997

Data Base: TBD

Publications: TBD

Category: II.C

Keywords: Government, Estimating, Analysis, Aircraft, Data Collection, Electronics/Avionics, Mathematical Modeling, Computer Model Statistics/Regression, CER, Data Base, Mathematical Model

Title: C3 Hardware Maintenance Roadmap

Summary: Project is to build data sources Roadmap and develop CERs/factors to improve our ability to estimate the maintenance costs of C3 systems/subsystems.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

Major Don Markel

Performer: MCR

Resources: FY 95: $100,000

FY 96: $120,000

Schedule: Start: September 1995

End: May 1997

Data Base: TBD

Publications: TBD

Category: II.D

Keywords: Government, Estimating, Analysis, Aircraft, Operating and Support, Maintenance, Electronics/Avionics, Data Collection, Mathematical Modeling, Statistics/Regression, CER, Data Base, Mathematical Model, Computer Model

Title:	SEPM Database and CERs
Summary:	Project is to build a database and develop CERs/factors to improve our ability to estimate the costs of systems engineering/program management based on manloading data.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency
	Captain William Timmons
Performer:	TASC, Inc.
Resources:	FY 96: $180,000
Schedule:	Start: June 1996
	End: June 1997
Data Base:	TBD
Publications:	TBD
Category:	II.C
Keywords:	Government, Estimating, Analysis, Aircraft, Mathematical Modeling, Data Collection, Electronics/Avionics, CER, Data Base, Statistics/Regression, Mathematical Model, Computer Model

Title: Estimating Handbooks for ST&E, PSE, Data, Training

Summary: Project is develop handbooks that serve as references to assist an analyst in estimating STE, Data, PSE, and Training. They provide a detailed description of various alternative methodologies, data sources, models, databases etc.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

TBD

Performer: TBD

Resources: TBD

Schedule: Start: October 1996

End: September 1997

Data Base: TBD

Publications: TBD

Category: II.A.2

Keywords: Government, Estimating, Analysis, Aircraft, Electronics/Avionics, Data Collection, Mathematical Modeling, Data Base, Computer Model, Statistics/Regression, CER, Mathematical Model

Title:	ADPE Tech/Discount factor

Summary: Project is develop factors to forecast the effects of technology changes and quantity/competitive discounts on the costs of computer hardware.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

TBD

Performer: TBD

Resources: TBD

Schedule: Start: October 1996

End: September 1997

Data Base: TBD

Publications: TBD

Category: II.A.1

Keywords: Government, Estimating, Analysis, Aircraft, Electronics/Avionics, Data Base, Data Collection, Mathematical Modeling, Statistics/Regression, CER, Mathematical Model, Computer Model

Title:	Database/CER Updates

Summary: Project is to collect additional datapoints and refine CERs developed in other recent projects: C3 Integration, C3 O&S Roadmap, and SEPM study.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency

TBD

Performer: TBD

Resources: TBD

Schedule: Start: October 1996

End: September 1997

Data Base: TBD

Publications: TBD

Category: II.A.1

Keywords: Government, Estimating, Analysis, Aircraft, Data Collection, Electronics/Avionics, Mathematical Modeling, Data Base, Statistics/Regression, CER, Mathematical Model, Computer Model

Title: Post Deployment Software Support (PDSS)

Summary: Software maintenance presently represents, approximately, 75% of software life cycle costs. Yet, we have very little insight into the processes and costs to adequately estimate this acquisition phase. PDSS is designed to analyze processes, metrics, historical data, taxonomies, and result in a database that leads to improved estimating methodology for software maintenance costs. Phase one efforts will provide documentation describing processes used by Air Force software maintenance organizations to estimate software maintenance activity that supports their Program Objective Memorandum (POM). It includes gathering data at Air Force software maintenance facilities on definitions of software maintenance phases, metrics used, and available actual software maintenance data. Phase two gathers more phase one type information and establishes a taxonomy for data gathering and analysis in subsequent phases.

Classification: Proprietary

Sponsor: Air Force Cost Analysis Agency

Captain Scott Koehler   (703) 602-9227/DSN 332-9227
                             (koehler@afcaapo.afcaanet.hq.af.mil)

Performer: The Analytic Sciences Corporation (prime contractor)

Resources: FY 96: $112,000

Schedule: Start: June/July 1996 initiation with yearly follow-ons

             End: TBD

Database: SW maintenance data for various domains.(AIS, Aircraft, Missile, Space Systems, Electronics, Avionics, AIS Systems)

Publications: None

Category: II.A, II.D

Keywords: Government, Estimating, Analysis, Aircraft, Missiles, Space Systems, Electronics/Avionics, Automation, Life Cycle, Risk, Size, Data Collection, Data Base, Study

Title: Software Growth Study

Summary: This research project investigates the growth of software during it's life cycle. The FY 95 effort was a relatively small preliminary study to determine the feasibility of a more in-depth data collection effort by assessing the availability of relevant data from a variety of sources (OSD PA&E, NCCA, AFCAA, USACEAC, etc.). Initially for FY 96, projected software effort at various stages of software development will be collected from contract award (or BAFO) to final delivery. Because of increasing use of CASE tools and 4GLs, as well as inherent problems with standard size metrics (such as SLOC or function/object points), the primary metric used in this study will be staff hours. The study first investigates data availability and collects raw data from Air Force product centers. Follow-on efforts analyze and normalize data and expand data collection to include government and private industry software projects throughout their life cycle. In total, the study will attempt to develop a data base of domain-specific software growth factors for use in software cost estimation and risk analysis.

Classification: Proprietary

Sponsor: Air Force Cost Analysis Agency

Ms Ann A Pilla   (703) 602-8147/DSN 332-8147
(pilla@afcaapo.afcaanet.hq.af.mil)

Performer: The Analytic Sciences Corporation (prime contractor)

Resources: FY 95: $25,000

Schedule: Start: August 1995

End: TBD

Database: Historical software growth factors for various domains.(AIS, Aircraft, Missile, Space Systems, Electronics, Avionics Systems)

Publications: None

Category: II.A, II.D

Keywords: Industry, Government, Estimating, Analysis, Aircraft, Missiles, Space Systems, Electronics/Avionics, Life Cycle, Risk/Uncertainty, Size, Data Collection, Data Base, Study, Computer Model, Automation

Title: Software Database Development

Summary: Cost analysts currently uses various commercial parametric software cost estimating models to estimate the cost of DOD software systems. The first step of this research project is to analyze the existing software data collected on previous estimates. Next, based on this analysis determine what type of additional software data should be collected, followed by collecting the appropriate data. The collection and analysis of this data should segregate the data by functional area (e.g. radar, financial systems, training). A software database will (1) permit estimating relationships to be built by the analyst with the most representative data, (2) allow for model calibration, (3) assist in perform estimating cross-checks, and (4) provide the necessary information to perform different types of estimating methodologies (e.g. hours), and (5)allow for the development of parametric model defaults.

Classification: Proprietary

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources:

Schedule: Start: 1998

End: TBD

Database: Various raw software data normalized into functional areas

Publications: None

Category: II.A, II.D

Keywords: Industry, Government, Estimating, Computer Models, Data Collection, Data Base, Survey, Automation, Analysis

Title: COTS Integration Research

Summary: There is currently insufficient information to adequately estimate the cost of integrating Commercial-Of-The-Shelf (COTS) software with DOD developed software. This inability to adequately predict this cost has made COTS integration a significant acquisition wild card. This level of effort project is technical service provided to the Air Force Cost Analysis Agency (AFCAA) and is dependent upon results from the PDSS and Software growth studies. Phase one entails data collection activity for integration into a taxonomy derived from previous research efforts. Phase two will entail the analysis of this data for trends, relationships, and application to estimating the cost of COTS integration. Phase three will include additional data gathering, documentation, normalization, analysis, introduction of the software metrics gathered into the SoftEST database, and the maintenance of the data gathered.

Classification: Proprietary

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources:

Schedule: Start: October 1998

End: TBD

Database: COTS Integration data for various domains (AIS, Aircraft, Missile, Space Systems, Electronics, Avionics, AIS Systems)

Publications: None

Category: II.A, II.D

Keywords: Industry, Government, Estimating, Analysis, Aircraft, Missiles, Space Systems, Electronics/Avionics, Automation, Life Cycle, Risk/Uncertainty, Size, Data Collection, Data Base, Study

Title: Software Security Integration Study

Summary: This project will focus on gathering information pertaining to current software security issues. Although security is one of the greatest single cost drivers involved in a software development, there is very little cost information. As the Air Force begins to emphasize information security, both old and new programs will inherit the burden of adding this security requirement to their systems. With several choices in implementing a solution, costs can vary widely. This software security integration study will attempt to categorize security solutions into three categories: COTS solutions, new programs, and migrated programs. Within each category the project will collect costing information on attaining each level of NIST "Orange Book" compliance.

Classification: Proprietary

Sponsor: Air Force Cost Analysis Agency

Performer: TBD

Resources: FY 98: TBD

Schedule: Start: October 1998

            End: TBD

Database: TBD

Publications: None

Category: II.C, II.D

Keywords: Government, Estimating, Risk/Uncertainty, Security, Modification, Data Collection, Integration

Title: Software Size Estimating Methods Study

Summary: A technical review of existing software size measures focusing on source lines of code (SLOC), function points (FP) and possibly object points (OP). The objective is to identify strengths and weaknesses of each as both a measure and an estimator of software size. Will also identify when each measure can/should be used, the applicability of each measure in different software domains, and limitations associated with each measure. Will extend efforts initiated by AFCAA staff and others to describe each measure and document its usefulness to DoD software estimating and measurement.

Classification: Unclassified, Public Domain

Sponsor: Air Force Cost Analysis Agency

Mr. John B. Donald   (703) 604-0412/DSN 664-0412
                            (donald@afcaapo.afcaanet.hq.af.mil)

Performer: Quality Research (prime contractor)

Software Productivity Consortium (subcontractor)

Resources: FY 95: $100,000

Schedule: Start: August 1995

End: July 1996

Data Base: None

Publications: A Technical Description and Review of Software Size Measures

Category: I.B, II.A, II.B, II.D

Keywords: Government, Estimating, Size, Survey, Review, Report, Study

Title:	Neural Network Analysis of Historic Software Development Data

Summary: This effort will apply neural network analysis expert systems technology to available software development data to determine whether logical but non-statistical relationships exist that can be used as alternate methods for estimating software development effort and/or schedule. Initial effort will focus on analysis of existing data to identify possible relationships within the data and to "train" the neural network algorithm(s). Subsequent efforts will attempt to apply the "trained" algorithm to estimate the effort and schedule of completed software development efforts. If credible estimating relationships are identified, a neural network estimating model will subsequently be developed.

Classification: Unclassified, Public Domain

Sponsor: Air Force Cost Analysis Agency

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(donald@afcaapo.afcaanet.hq.af.mil)

Performer: Air Force Cost Analysis Agency

Mr. John B. Donald   (703) 604-0412/DSN 664-0412
(donald@afcaapo.afcaanet.hq.af.mil)

Resources: $5,000

Schedule: TBD

Data Base: None

Publications: Application Of Neural Network Analysis To Software Estimating

Category: I.B, II.B, II.D

Keywords: Government, Industry, Analysis, Estimating, Expert System, Mathematical Modeling, Mathematical Model, Computer Model, Study

Title:	Software Estimating Process Study—Generic Estimating Question Set
Summary:	Development of an consolidated set of questions/parameters used in multiple software estimating models. This is an interim product to be used in developing a generic data set for software estimating. The generic data set will be used as part of the SoftEST Software Estimating Expert System to support development of generic data sets that can be translated into the proper settings for a variety of different estimating models.
Classification:	Unclassified, Public Domain
Sponsor:	Air Force Cost Analysis Agency
	Mr. John B. Donald (703) 604-0412/DSN 664-0412 (donald@afcaapo.afcaanet.hq.af.mil)
Performer:	SAIC—Washington
Resources:	FY 95: $35,000
Schedule:	Start: August 1995
	End: May 1996
Data Base:	None
Publications:	Software Estimating Data Collection Question Set
Category:	II.A
Keywords:	Government, Industry, Estimating, Analysis, Data Collection, Expert System, Computer Model, Study

Title:	Software Data Collection

Summary: Screening and collection of selected data elements on a number historic software development efforts. Primary focus on development efforts that used the Ada programming language and support environments, but also seeking projects that used other software engineering techniques such as 4GLS and object oriented techniques, etc. FY 94 effort focuses on screening Ada Joint Program Office database of approximately 1000 completed Ada projects to characterize and qualify the programs on selected attributes. FY 95 data collection resulted in collection of approximately 100 data points (CSCIs) that used Ada and was used to re-calibrate the REVIC software estimating model Ada mode. Future efforts will focus on collecting data as required to meet specific estimating and analysis objectives.

Classification: Unclassified, Public Domain

Sponsor: Air Force Cost Analysis Agency

John B. Donald   (703) 604-0412/DSN 664-0412
(donald@afcaapo.afcaanet.hq.af.mil)

Performer: FY 95 Data Screening: SAIC—Washington

FY 95 Data Collection: MCR

Follow-ons: TBD

Resources: FY 94 AJPO Data Screening: $35,000

FY 95 Data Collection: $100,000

Follow-ons: TBD

Schedule: AJPO Data Screening: Completed Dec 95;

FY 95 Data Collection: Ends Jul 96

Data Base: Software Development Data

Publications: None

Category: I.D, II.A

Keywords: Government, Analysis, Weapon Systemss, EMD, Data Collection, Mathematical Modeling, Data Base

Title: Expert Systems for Software Estimating

Summary: Application of expert system technology to software estimating. The objective is to capture the skill and knowledge of highly skilled software cost analysts and provide it in a easily used format. Initial effort will focus on developing an expert system to assist analysts in specifying the software development environment parameters. Subsequent opportunities to apply expert systems technology will be considered in relation to software size and schedule estimating. Primary effort for FY 96 focuses on knowledge engineering.

Classification: Unclassified, Public Domain

Sponsor: Air Force Cost Analysis Agency

Mr. John B. Donald   (703) 604-0412/DSN 664-0412
                       (donald@afcaapo.afcaanet.hq.af.mil)

Performer: University of Southern California

Resources: FY 96: $300,000

Schedule: Start: FY 96 Effort

Ends: March 1997

Data Base: None

Publications: None

Category: I.D, II.A

Keywords: Government, Industry, Estimating, Analysis, Cost Model, Expert System, Study

Title:	SoftEST Software Estimating Tool

Summary: A generic software estimating tool that integrates the REVIC, COCOMO/COCOMO 2, and potentially the SASET software estimating models with appropriate software size estimating tools, and extensive user help/guidance. The primary objectives are to serve as a backplane for development and implementation of existing and future software estimating techniques, implementation of a generally accepted software estimating process coupled with extensive user help, and to serve as a standard "front-end" to a variety of commercial estimating models to facilitate use of multiple estimating models without the need to rebuild the estimate in each model. The overall objective is to improve the quality and consistency of software estimates.

Classification: Unclassified, Public Domain

Sponsor: Air Force Cost Analysis Agency

Mr. John B. Donald   (703) 604-0412/DSN 664-0412
(donald@afcaapo.afcaanet.hq.af.mil)

Performer: R.K.K. Enterprises

Resources: FY 94: $436,000   FY 96: $200,000
FY 95: $150,000

Schedule: SoftEST Version 1.0 completed March 1996;

SoftEST Version 2.0 starts June 1996 and ends March 1997

SoftEST Follow-ons TBD

Data Base: None

Publications: None

Category: I.B, II.A, II.B

Keywords: Government, Estimating, Analysis, Cost Model, EMD, Life Cycle, Operations and Support, Automation, Advanced Technology, Training, Risk/Uncertainty, Modification, Size, Mathematical Modeling, Computer Model, Expert System, CER

Title: Software Performance Measurement System

Summary: Development of a tool for measuring developer performance on software development efforts. Essentially a "software C/SCSC system." Extension of the existing Software Performance Measurement Model originally developed by Martin Marietta as part of SASET software estimating model. To be eventually implemented as part of SoftEST Software Estimating Tool.

Classification: Unclassified, Public Domain

Sponsor: Air Force Cost Analysis Agency

Mr. John B. Donald   (703) 604-0412/DSN 664-0412
                                      (donald@afcaapo.afcaanet.hq.af.mil)

Performer: SAIC—Washington

Resources: FY 94: $75,000

Schedule: Completed July 1995

Data Base: None

Publications: "Software Performance Measurement Study"

Category: I.D

Keywords: Government, Industry, Estimating, Analysis, EMD, Study

Title: Activity-Based Software Estimating Methodology

Summary: Development of a new methodology for estimating software development and support that breaks down the software development/support process into more discrete activities or functions that can be estimated using techniques other than the top-level "size" (SLOC, FP) of the product. Extends the concept of the SASET estimating methodology and emulates an engineering build-up approach to software estimating.

Classification: Unclassified, Public Domain

Sponsor: Air Force Cost Analysis Agency

Mr. John B. Donald (703) 604-0412/DSN 664-0412
(donald@afcaapo.afcaanet.hq.af.mil)

Performer: TBD

Resources: TBD

Schedule: Start: FY 98+

End TBD

Data Base: None

Publications: None

Category: I.B, II.D

Keywords: Government, Estimating, Analysis, Method

Title: Software Functional-Based Size Estimating Method—Domain and Functional Software Taxonomy

Summary: This is a preliminary step toward revising the existing SASET Functional Sizer and SMC Software Database for estimating software size by analogy especially early in program development. The objective is to develop a complete taxonomy of typical software functionality linked to the system WBS. By selecting individual WBS elements, analysts will be able to identify the size of the software in historically analogous programs. This categorization will supplement existing classification schemes based on software functionality, domain, etc. This capability will enable analysts to "flush out" the general functionality associated with major system WBS elements early in the program and provide historic actual sizes for developing size estimates by analogy. It will also assist analysts by providing a basis for interacting with the program office or developer to insure that all software functionality is being considered in the estimate. The resulting product will be implemented in the SoftEST Software Estimating tool.

Classification: Unclassified, Public Domain

Sponsor: Air Force Cost Analysis Agency

Mr. John B. Donald   (703) 604-0412/DSN 664-0412
(donald@afcaapo.afcaanet.hq.af.mil)

Performer: TBD

Resources: TBD

Schedule: Phase I: FY 97

Follow-ons: TBD

Data Base: None

Publications: A Taxonomy of DoD Software Functionality by Domain

Category: I.B, II.A, II.B, II.D

Keywords: Government, Industry, Size, Estimating, Analysis, Concept Development, Demonstration/Validation, Study, Review, Weapon Systems

Title: Aircraft Cost and Engineering Tool

Summary: The objective of this task is to allow changes in the design of an aircraft to automatically flow-through to the CER's embedded in a cost model. Each iteration of an aircraft design has a different cost estimate. As changes to the design are made the impact of these changes will be calculated automatically and provided to the designer.

Classification: Proprietary.

Sponsor: Air Force Cost Analysis Agency
Technical Support Division

Ms. Ranae Pepper   (703)602-9333
                          pepper@afcaapo.afcaanet.hq.af.mil

Performer: Tecelote Research, Inc.

Resources: $95,000

Schedule: Start: May 1996

End: May 1997

Data Base: N/A

Publications: User Documentation.

Category: II.A.2

Keywords: Government, Automation, Weapon Systems, Aircraft, Estimating, Analysis, Case Study, Study

Title:	ACDB Upgrades (FY 96)

Summary: Update of the Automated Cost Database (ACDB) search and retrieval module. This tool allows cost and technical data from major weapon system acquisitions to be stored and enables our analysts to easily search and retrieve data from the database to perform cost estimates. These upgrades focus on improving the abilities to search and retrieve data in the database.

Classification: Proprietary

Sponsor: Air Force Cost Analysis Agency
Technical Support Division

Ms. Ranae Pepper   (703)602-9333
                          pepper@afcaapo.afcaanet.hq.af.mil

Performer: Tecelote Research, Inc.

Resources: FY 96: $150,000

Schedule: Start: May 1996

End: May 1997

Data Base: This project does not create the databases but enhances the database tool itself for easier search and retrieval.

Publications:

Category: II.A.2

Keywords: Government, Automation, Data Base, Computer Model

Title: ACDB Upgrades (FY 97 and out)

Summary: Update of the Automated Cost Database (ACDB). This tool stores cost and technical data for major weapon system acquisitions, and enables our analysts to easily search and retrieve data from the database to perform cost estimates.

Classification: Proprietary

Sponsor: Air Force Cost Analysis Agency
Technical Support Division

Ms. Ranae Pepper   (703)602-9333
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Performer: Tecelote Research, Inc.

Resources:

Schedule: Start: Apr 97

End: Follow-ons through FY 03

Data Base: This project does not create the databases but enhances the database tool itself for easier data entry and search and retrieval.

Publications:

Category: II.A.2

Keywords: Government, Automation, Data Base, Computer Model

Title: ACEIT Upgrades (FY 94)

Summary: Update of ACEIT cost estimating software to improve cost estimate accuracy and cost estimator productivity. This project allowed row-by-row printing of documentation, setting and adjustment of page numbers, headers and footers, bold-face type, and some Ri$k module enhancements. This project funded only the DOS version of ACEIT.

Classification: Unclassified.

Sponsor: Air Force Cost Analysis Agency
Technical Support Division

Ms. Ranae Pepper (703)602-9333
pepper@afcaapo.afcaanet.hq.af.mil

Performer: Tecelote Research, Inc.

Resources: FY 95: $150,000

Schedule: Start: October 1994

End: July 1995

Data Base: N/A

Publications: ACE-IT User Manuals and Supporting Documentation

Category: II.A.2, II.B

Keywords: Industry, Government, Estimating, Analysis, Weapon Systems, Life Cycle, Method, Computer Model

Title: ACEIT Upgrades (FY 95)

Summary: Update of ACEIT cost estimating software to improve cost estimate accuracy and cost estimator productivity. This project funded the first version of ACEIT in the Windows environment. The Windows version of ACEIT allows cutting and pasting to other windows applications (Word, Excel, and Power Point), use of a Windows-based word processor with bold-face type, underlining, and font specification, full mouse support, and a print preview screen.

Classification: Unclassified.

Sponsors: Air Force Electronic Systems Center, Air Force Cost Analysis Agency, and US Army Cost and Economic Analysis Center

Air Force Cost Analysis Agency
Technical Support Division

Ms. Ranae Pepper   (703)602-9333
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Performer: Tecelote Research, Inc.

Resources: FY 95: $350,000

Schedule: Start: January 1994

End: July 1996

Data Base: N/A

Publications: ACE-IT User Manuals and Supporting Documentation

Category: II.A.2, II.B

Keywords: Industry, Government, Estimating, Analysis, Weapon Systems, Life Cycle, Method, Computer Model

Title:	ACEIT Upgrades (FY 96)

Summary: Update of ACEIT cost estimating software to improve cost estimate accuracy and cost estimator productivity. This project funds the second version of ACEIT in the Windows environment. The task increases software speed, allows entry of variables for beta phasing start and end dates, allows for easier data entry, and relative phasing of cost rows. This task also enhances Co$tat.

Classification: Unclassified.

Sponsors: Air Force Electronic Systems Center, Air Force Cost Analysis Agency, and US Army Cost and Economic Analysis Center

Air Force Cost Analysis Agency
Technical Support Division

Ms. Ranae Pepper   (703)602-9333
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Performer: Tecelote Research, Inc.

Resources: FY 95: $185,000

Schedule: Start: May 1996

End: May 1997

Data Base: N/A

Publications: ACE-IT User Manuals and Supporting Documentation

Category: II.A.2, II.B

Keywords: Industry, Government, Estimating, Analysis, Weapon Systems, Life Cycle, Method, Computer Model

Title:	ACEIT Upgrades (FY 97 and out)

Summary: Update of ACEIT cost estimating software to improve cost estimate accuracy and cost estimator productivity. Our mission is to perform cost estimates in support of weapon system major milestone decisions. This tool enables our agency to prepare and document our cost estimates more effectively. This project specifically upgrades the Windows Version of ACEIT.

Classification: Unclassified.

Sponsor: Air Force Cost Analysis Agency
Technical Support Division

Ms. Ranae Pepper   (703)602-9333
                          pepper@afcaapo.afcaanet.hq.af.mil

Performer: Tecelote Research, Inc.

Resources: TBD

Schedule: Start: April 1997

End: April 1998

Data Base: N/A

Publications: ACE-IT User Manuals and Supporting Documentation

Category: II.A.2, II.B

Keywords: Industry, Government, Estimating, Analysis, Weapon Systems, Life Cycle, Method, Computer Model

ARMY MATERIEL COMMAND

Name	Headquarters, US Army Materiel Command Cost Analysis Division
Address	5001 Eisenhower Avenue Alexandria, VA 22333-0001
Director	Ms. Mary Ann P. Dominiak (703) 617-9100
Size	Professional: 17 Support: 1 Consultants: 0 Subcontractors: 1
Focus	Materiel Systems Cost Estimating, Economic Analysis and Earned Value Management
Activity	Number of projects in process: 3 Average duration of a project: 2 years Average number of staff members assigned to a project: 1 Average number of staff-years expended per project: 0.5 Percentage of effort conducted by consultants: 0% Percentage of effort conducted by subcontractors: 50%

Title: Artificial Intelligence In Cost And Economic Analysis

Summary: This project involves the application of Artificial Intelligence techniques in the development of a family of tools to assist in cost and economic analysis of Army programs to achieve the best possible validation and estimation studies and decision making. A knowledge based or expert system will be developed and other technologies such as Artificial Neural Networks will be evaluated for possible adoption.

Classification: Unclassified

Sponsor: HQ AMC

Army AI Center Funded

Performer: HQ AMC, MSC's, other offices.

Dr. Charles C. Chapin   (703) 617-9102/DSN 767-9102
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Resources: Dollars: $30,000 OMA

Staff-years:

Schedule: Start: March 1996

End: Continuous

Data Base: Kappa-PC unique

Publications: New start

Category: II.B

Keywords: Government, Estimating, Analysis, Reviewing/Monitoring, Policy, Programming, Budgeting, Weapon Systems, Life Cycle, Expert System, Study

Title:	Acquisition Reform Savings for the Army's Defense Acquisition Pilot Program

Summary:	To properly task and report the savings from acquisition reform the Army's Simulation, Training and Instrumentation Command has committed to tracking the costs of an acquisition reform program with the expected costs of the same program conducted without acquisition reform. The program is the Fire Support Combined Arms Tactical Trainer, a collective training system for howitzer crews. Initial results expect a 34% savings in development costs and a 7% production savings. Initiatives measured are in quality assurance, data/configuration management, program management, test and evaluation, contact type and structure, design and assembly, software, manufacturing, parts control and ILS.

Classification:	Unclassified
Sponsor:	Simulation Training and Instrumentation Command (STRICOM) with Army Materiel Command (AMC) and Cost And Economic Analysis Center (CEAC) Support
Performer:	STRICOM, AMC and Hughes Training, Inc.
	Mr. Mack Perry (407) 380-4362/DSN 960-4362
	Mr. Ken Freund (703) 617-9082/DSN 767-9082
Resources:	Dollars:
	Staff-years: 2.0
Schedule:	Start: March 1995
	End: Development and production contract completion
Data Base:	Army Materiel Command Cost Research Project
Publications:	FSCATT Would-Cost Report, 21 December 1995, Hughes Training Inc. FSCATT Acquisition Reform baseline (Contract and Government costs), Draft
Category:	I.A
Keywords:	Government, Analysis, Life Cycle, Labor, Material, Acquisition Strategy, Case Study, Expert System, Study

Title: Baseline of Services

Summary: Collect base support data from AMC installation in an effort to establish budget rules for allocating resources which may be used in deriving the budget for major subordinate commands and their installations

Classification: Unclassified

Sponsor: Army Materiel Command (AMC) Resource Management

Performer: HQ AMC, MSCs and their installations
CALBRE Systems, Inc.

John Chapman   DSN: 767-8030
                                E-mail: jchapman@alexandria-
                                            emh1.army.mil

Resources: Dollars: $311,230

Staff-years:

Schedule: Start: August 1995

End: October 1996

Data Base: N/A

Publications: Final Report

Category: II.B

Keywords: Government, Budgeting, Infrastructure, Data Collection, Data Base

US ARMY TANK-AUTOMOTIVE AND ARMAMENTS COMMAND

Name	Directorate of Cost & Systems Analysis (AMSTA-RM-V) Cost Analysis Division (AMSTA-RM-VC)
Address	US Army Tank-Automotive and Armaments Command Warren, MI 48397-5000
Director	Russell F. Feury Phone: (810) 574-6665 Fax: (810) 574-8620
Size	Professional: 3 Support: Consultants: Subcontractors:
Focus	Responsible for the preparation of Program Office Estimates (POEs), Life Cycle Estimates (LCCEs) and Economic Analyses (EAs). Perform cost validation to determine the reasonableness of cost estimates. Support the Army's Operating and Support Cost Reproduction program. Support the Earned Value Management Process. Develop cost models and data bases along with performing cost research. Support is provided to combat and combat support vehicle systems.

Activity

Number of projects in process: 16
- Program Office Estimates — 3*
- Life Cycle Estimates — 7
- Economic Analyses — 5
- Cost Research — 1

Average duration of a project:
- Program Office Estimates — 12-16 weeks
- Life Cycle Estimates — 5-7 weeks
- Economic Analyses — 3-5 weeks
- Cost Research — Variable

Average number of staff members assigned to a project:
- Program Office Estimates — 4
- Life Cycle Estimates — 2
- Economic Analyses — 1
- Cost Research — 2

Average number of staff-years expended per project:

Percentage of effort conducted by consultants:

Percentage of effort conducted by subcontractors:

*Armored Gun System, Heavy Assault Bridge, Advanced Technology Program

Title:	Performance Affordability Assessment Model (PAAM)

Summary: The objective of this modeling effort is to develop a cost model that will perform rapid costing of technology alternatives that are played during the CASTFOREM wargame modeling process, and allow the cost trade-offs to be performed. This effort meets the objectives of the current DoD focus of Cost as an Independent Variable (CAIV).

Classification: Unclassified

Sponsor: US Army Tank-Automotive and Armaments Command
AMSTA-RM-VC

Richard Bazzy   (810) 574-6666

Performer: US Army Tank-Automotive and Armaments Command
AMSTA-RM-VC

Diane Hohn   (810) 574-8693
Manus Nemeth

Resources: Dollars: $158,000

Staff-years: 2.5

Schedule: Start: May 1994

End: June 1996 (for prototype demo)

Data Base: None

Publications: None

Category:

Keywords: Government, Estimating, Advanced Technology, Mathematical Model

ARMY SPACE AND STRATEGIC DEFENSE COMMAND

Name	Program Analysis and Integration Directorate Cost Analysis Division US Army Space and Strategic Defense Command
Address	106 Wynn Drive P.O. Box 1500 Huntsville, AL 35807
Director	Ms. Carolyn S. Thompson, PA&I Director (205) 955-3069 Mr. Jackson G. Calvert, Cost Analysis Division Chief (205) 955-3612
Size	Professional: 11 Support: 3 Consultants: 1 Subcontractors: 1
Focus	Systems Costs, Component Cost Analyses, Economic Analyses
Activity	Number of projects in process: Average duration of a project: 1 year Average number of staff members assigned to a project: 1-2 Average number of staff-years expended per project: 1.0 Percentage of effort conducted by consultants: 25% Percentage of effort conducted by subcontractors: 25%

Title: MADCAM (Microwave and Digital Cost Analysis Model)

Summary: Estimates the T1 cost of electronic boxes as a function of their distinguishing design characteristics. Task began in 1992 under an Air Force contract, and then taken under Navy sponsorship in late 1994. The model is now in its fourth release, and is called "MADCAM 96"

Classification: Unclassified

Sponsor: Navy Engineering Logistics Office

Performer: Tecolote Research, Inc.

Brad Frederic
Bill Jago

US Army Space and Strategic Defense Command

Jack Calvert   (205) 955-3612

Resources: Dollars: $81,731

Staff-years: 0.5

Schedule: Start: September 1995

End: February 1996

Data Base: Electronic Boxes

Publications: "MADCAM 96 (Microwave and Digital Cost Analysis Model) Presentation Document," 29 February 1996

Category: II.A.1

Keywords: Government, Estimating, Missiles, EMD, Manufacturing, Data Collection, Computer Model

Title: Phase One Missile System Demilitarization and Disposal Cost Data Collection

Summary: Typical past missile system life cycle cost estimates have not included the costs associated with missile system disposal and demilitarization. This document provides the study results from an initial cost research project to examine these costs.

Classification: Unclassified

Sponsor: Office of the Secretary of Defense
Program Analysis and Evaluation (PA&E)
Cost Analysis Improvement Group (CAIG)

Performer: Tecolote Research, Inc.

Jeff A. McDowell
Darryl K. Arnold
Michael K. Allen

US Army Space and Strategic Defense Command

Bill Hughes   (205) 955-5913

Resources: Dollars: $75,000

Staff-years: 0.65

Schedule: Start: January 1995

End: September 1995

Data Base: Missile System Demilitarization

Publications: "Phase One Missile System Demilitarization and Disposal Cost Data Collection," September, CR-0780/1

Category: I.D

Keywords: Government, Estimating, Missiles, Retirement and Demilitarization, Environment, Data Collection, Study

Title:	Attitude Control Systems/TMD Boosters Cost Research
Summary:	This task provides methodologies for estimating the costs of Theater Missile Defense (TMD) boosters and Attitude Control Systems (ACS). Most other booster and DAC methodologies available address larger strategic defense missiles, and lack the range to best estimating the smaller TMD systems.
Classification:	Unclassified
Sponsor:	US Army Space and Strategic Defense Command
Performer:	Tecolote Research, Inc.

Jeff A. McDowell
Darryl K. Arnold

US Army Space and Strategic Defense Command

Ben Davis · (205) 955-5466

Resources:	Dollars: $90,000
	Staff-years: 0.75
Schedule:	Start: December 1994
	End: January 1996
Data Base:	Booster/Attitude Control Systems for Smaller TMD Missiles
Publications:	"Attitude Control Systems/TMD Boosters Cost Research," January 1996, CR-0798, Unclassified
Category:	II.A.2
Keywords:	Government, Estimating, Propulsion, Electronics/Avionics, Life Cycle, Manufacturing, Data Collection, Statistics/Regression, CER

BALLISTIC MISSILE DEFENSE ORGANIZATION

Name	Ballistic Missile Defense Organization (BMDO)
Address	Pentagon Washington, DC 20330-7100
Director	Mr. James Dryden (703) 604-0364
Size	Professional: 5 Support: 0 Consultants: 0 Subcontractors: 38
Focus	Cost Methodology Improvement Projects
Activity	Number of projects in process: 16
	Average duration of a project: 10 months
	Average number of staff members assigned to a project: 1
	Average number of staff-years expended per project: 0.5
	Percentage of effort conducted by consultants: 0%
	Percentage of effort conducted by subcontractors: 90%

Title: Cost Estimating Cross Check Guide

Summary: The purpose of this effort is to provide a methodology and database which cost analysis can use to perform cross-checks and creditability assessments of estimates they generate. Currently, there exists not formal methodology or consolidated database to accomplish these assessments. All cost cross-checks are currently done using the cost analyst's personal database and experience. It is anticipated that this methodology will be used to support all quick reaction cost estimates, with POM drills and budget updates experiencing the greatest benefit. To date, the methodology has been developed, a database has been generated, and the final report is being written. This is not a follow-on to a 1995 task but is a stretchout due to higher priority projects.

Classification: Unclassified (Proprietary)

Sponsor: Ballistic Missile Defense Organization (BMDO)
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Performer: Science Applications International Corporation
6725 Odyssey Drive
Huntsville, AL 35806-3301

G. Todd Honeycutt   (205) 971-6452

Resources: Dollars: N/A

Staff-years: 0.8

Schedule: Start: September 1994

End: May 1996

Data Base: Description: The current database exists as Microsoft Excel spreadsheets containing cost, performance and design for 38 missile systems, 49 satellites, and 46 radar systems. Bar chars graphically depict the relative cost of the various measures of cost outlined in the methodology.

Automation: Microsoft Excel

Publications: "Cost Estimating Cross Check Guide," Pending

Category: II.A.2

Keywords: Government, Analysis, Review/Monitoring, Weapon Systems, Missiles, Space Systems, Electronic/Avionics, Test and Evaluation, Demonstration/Validation, EMD, Production, Data Collection, Data Base, Method

Title: Radar Hardware Cost Estimating Relationships (CERs) Database

Summary: The Ballistic Missile Defense Organization (BMDO) requires cost estimating methods and CERs for radar hardware components, subassemblies, and subsystems to support on going life cycle modeling of BMDO programs. A large number of CERs have been developed that apply to the BMDO effort. The requirement exists for a repository of all available radar hardware CERs that are available for application in BMDO life cycle economic models. The objective of this task is to research and collect existing radar hardware CERs and catalog them into an database. Each CER is fully documented based on information in the source document and displayed in a standard format. A common radar subsystem, assembly, subassembly, and component levels. The database is further divided into conventional tube technology and solid state technology. A separate WBS and CERs are presented for each type of technology. This is not a follow on to a 1995 task but is a stretchout due to higher priority projects.

Classification: Unclassified

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Sharon Roberts
Bill Shelton

Resources: Dollars: N/A

Staff-years: 0.5

Schedule: Start: July 1994

End: June 1995

Data Base: Description: A resume sheet is prepared for each CER that describes the equation, input variables, list the source of the application, identifies what is included and excluded in the CER, presents statistical fit data if available, discusses any limitations, lists the systems used to develop the CER and the year dollars of the results.

Automation: Appropriate CERs are incorporated into existing BMDO models

Publications: "Radar Hardware Cost Estimating Relationships (CER) Database" June 1995

Category: II.A.1

Keywords: Government, Estimating, Analysis, Reviewing/Monitoring, Data Base, Electronics/Avionics, Production, WBS, Data Collection, Mathematical Modeling, Survey

Title: Missile Integration, Assembly, and Test (IA&T) Cost Methodology

Summary: The Ballistic Missile Defense Organization (BMDO) cost estimating methods require different levels of integration of missile components, subassemblies, and subsystems. Current convention uses a 7.4% integration factor at all levels. This factor cannot be supported at levels below the assembly level. The objective of this task is to research and collect data on missile integration cost at the subsystem, assembly, subassembly, and component levels and develop cost estimating relationships (CER) to estimate this effort. A methodology has been developed to estimate total and first unit integration cost for missile systems at the subsystem and assembly levels. This is not a follow on to a 1995 task but is a stretchout to high priority projects.

Classification: Unclassified

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Sharon Roberts (205) 971-6497

Resources: Dollars: N/A

Staff-years: 0.5

Schedule: Start: November 1994

End: May 1996

Data Base: Automation: Incorporated into existing BMDO missile cost models

Publications: "Missile Integration, Assembly, and Test (IA&T) Cost Methodology Improvement," Pending

Title: Endo-Atomspheric Missile Hardware Cost Estimating Relationships Database and Database Source Documentation

Summary: The Ballistic Missile Defense Organization (BMDO) requires cost estimating methods and CERs for missile hardware components, subassemblies, and subsystems to support life cycle modeling of BDMO programs. A large number of CERs have been developed that apply to the BMDO effort. The requirement exists for a repository of all available missile hardware CERs that are available for application in BMDO life cycle economic models. The objective of this task is to research and collect existing missile hardware CERs and catalog them into a database. Each CER is fully documented based on information in the source document and put into a standard format. A common WBS structure was developed and used for cataloging each CER. Cost estimating relationships were collected at the missile subsystem, assembly, subassembly, and component levels. This is the completion of a 1995 cost research task.

Classification: Unclassified

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Resources: Dollars: N/A

Staff-years: 0.5

Schedule: Start: May 1994

End: November 1994

Data Base:	Description:	A resume sheet is prepared for each CER that describes the equation, input variables, list the source of the equation, identifies what is included and excluded in the CER, presents statistical fit data if available, discusses any limitations, lists the systems used to develop the CER and the year dollars of the results.
	Automation:	Appropriate CERs are incorporated into BMDO Missile Cost Models

Publications: "Endo-Atomospheric Missile Hardware Cost Estimating Relationships (CERs) Database" and Database Source Documentation, November 1994

Category: II.A

Keywords: Government, Estimating, Analysis, Reviewing/Monitoring, Missiles, Propulsion, Airframe, Electronics/Avionics, Production, WBS, Data Collection, Mathematical Modeling, Survey, Data Base, CER

Title: Missile Hardware Step Functions

Summary: There has been an increased number of questions regarding the step function used by the Ballistic Missile Defense Organization (BMDO) to model missile prototype hardware cost. Data from a number of missile systems were assembled and evaluated to determine the relationship between the "missile" level hardware costs for the theoretical first unit during each phase of a program acquisition cycle (Dem/Val EMD, LRIP and Production). The study revealed a step function for scaling from EMD to full scale production, but the data was not sufficient to produce scaling factors among other phases. A final report containing the data points used in the analysis, the normalization process and results of analysis is under review. This is not a follow on to a 1995 task but is a stretchout due to high priority projects.

Classification: Unclassified

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Rick Taylor   (205) 971-6423
Bill Shelton

Resources: Dollars: N/A

Staff-years: 0.6

Schedule: Start: September 1994

End: August 1995

Data Base:	Description:	Data for approximately 20 missile systems including: Missile-level hardware costs for each phase, quantities, contract description, technology factor, newness factor, and data source
	Automation:	Microsoft Excel
Publications:	"Missile Hardware Step Functions," Pending	
Category:	II.A.1	
Keywords:	Government, Estimating, Analysis, Missile, Production, Data Base, Demonstration/Validation, EMD, Manufacturing, CPR/CCDR, Data Collection, Mathematical Modeling, Cost/Production Function, Study	

Title: Unit Cost versus Production Rate Analysis

Summary: The purpose of this effort is to develop a data base and methodology for adjusting recurring production hardware cost for changes in production rates. Causes and effects are to be identified, data collected, and a methodology developed to provide for adjustments in production rate changes. Currently, a methodology does not exist to provide for this adjustment. It is anticipated that this methodology will be used for POM and/or budget updates. This is not a follow on to a 1995 task but is a stretchout due to higher priority projects.

Classification: Unclassified

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Vicki B. Kitchens   (205) 971-6517
Bill Shelton

Resources: Dollars: N/A

Staff-years: 0.5

Schedule: Start: September 1994

End: December 1995

Data Base: Description: Current data base exists as a Microsoft Excel spreadsheet containing annual production rate, economic rate, rate variable, recurring production cost, average yearly unit cost, cumulative quantity, cumulative recurring production cost, cumulative unit cost, average yearly quantity for total program, and contractors for 9 missile systems, 5 passive sensor systems, and 2 airborne radar systems.

Automation: Microsoft Excel

Publications: "Unit Cost vs. Production Rate Analysis," December 1995

Category: II.A.2, II.B, II.C, II.D

Keywords: Government, Estimating, Analysis, Programming, Budgeting, Missiles, Electronic/Avionics, Production, Manufacturing, Production Rate, Schedule, Data Collection, Mathematical Modeling, Economic Analysis, Cost/Production Function, Statistics/Regression, Data Base, Method, CER, Study

Title: Below-The-Line CERs for Missile System Production/Deployment Phase

Summary: The purpose of this effort is to provide a methodology and database which cost analysts can use to estimate the Below-The-Line (BTL) or Program level cost elements. Currently, a consolidated methodology and database does not exist to accomplish this estimates. Consequently because of allocations made during data normalization and mapping into the BMDO BTL cost elements one cannot be sure that some costs are not either left out of that some costs might not be duplicated. By using one data base it thus becomes possible that one specific account/accounts might still be under or overstated, however, total cost should be captured and also without double accounting. The goal of the effort is to develop CERs which utilize technical or programmatic descriptors in lieu of cost ratios.

Classification: Unclassified

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Charlie Lyons   (205) 971-6502
Tim Bryson
John Grace
Fred Maksimowski
Bill Shelton

Resources: Dollars: N/A

Staff-years: 1.2

Schedule: Start: September 1995

End: May 1996

Data Base: Description: The current database exists as Microsoft Excel spreadsheets containing cost, performance and design data for 13 missile systems. The final data form for the BTL effort is total program is constant FY 88 dollars by BMDO Production/Deployment elements.

Publications: "Below-The-Line CERs for Missile System Production/Deployment Phase," Pending

Category: II.A.2, II.C

Keywords: Government, Estimating, Analysis, Reviewing/Monitoring, Missiles, Production, CPR/CCDR, WBS, Fixed Costs, Variable Costs, Schedule, Data Collection, Mathematical Modeling, Data Base, Method, CER

Title: Below-The-Line CERs for Radar System Production/Deployment Phase

Summary: The purpose of this effort is to provide a methodology and database which cost analysts can use to estimate the Below-The-Line (BTL) or Program Level cost elements. Currently, a consolidated methodology and database does not exist to accomplish these estimates. Consequently because of allocations made during data normalization and mapping into the BMDO BTL cost elements one cannot be sure that some costs are not either left out or that some costs might not be duplicated. By using one data base it thus becomes possible that one specific account/accounts might still be under or overstated, however, total cost should be captured and also without double accounting. The goal of the effort is to develop CERs which utilize technical or programmatic descriptors in lieu of cost ratios.

Classification: Unclassified

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Sharon Roberts   (205) 971-6588
James Rowan
Bill Shelton

Resources: Dollars: N/A

Staff-years: 1.2

Schedule: Start: September 1995

End: May 1996

Data Base: Description: The current database exists as Microsoft Excel spreadsheets containing cost, performance and design data for several radar systems. The final form for the BTL effort is total in constant FY 88 dollars by BMDO Production/Deployment elements.

Automation: Microsoft Excel

Publications: "Below-The-Line CERs for Radar Systems in Production/Deployment Phase," Pending

Category: II.A.2, II.C

Keywords: Government, Estimating, Analysis, Reviewing/Monitoring, WBS, Fixed Costs, Electronics/Avionics, Production, CPR/CCDR, Data Collection, Variable Costs, Mathematical Modeling, Data Base, Method, CER

Title:	Solid State Transmit/Receive (T/R) Module CER Update

Summary: The purpose of this effort is to collect, normalize, and prepare a database of solid state T/R recurring hardware cost, programmatic and technical data. Develop CERs for estimating a recurring production first unit hardware cost. Each CER should utilize technical or programmatic descriptors as independent variables. The effort will focus on solid state T/R modules currently being used or projected to be used in BMDO radars. The data collection and database portion of this effort is to be a joint project of BMDO and USASSDC.

Classification: Unclassified

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Performer: Science Applications International Corporation
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Huntsville, AL 35806-3301

Bill Shelton   (205) 971-6552

Resources: Dollars: N/A

Staff-years: 0.3

Schedule: Start: September 1995

End: May 1996

Data Base: Description: The current database exists as a Microsoft Excel spreadsheet containing cost, performance and design data for 11 T/R module programs. Additional data and updates of some of the current data points are in process.

Automation: Microsoft Excel

Publications: "Solid State Transmit/Receive (T/R) Module CER Update," Pending

Category: II.A.1

Keywords: Government, Estimating, Analysis, Electronic/Avionics, EMD, Demonstration/Validation, Production, Manufacturing, Data Base, CPR/CCDR, WBS, Data Collection, Mathematical Modeling, Method, CER

Title: Missile Divert and Attitude Control System (DACS)

Summary: The purpose of this effort is to provide a methodology and database which cost analysts can use to estimate DACS, whether they are solid, liquid, or gel. Currently, the database to accomplish these estimates is virtually nonexistent. Several technology programs are underway to develop the technology. Currently at least one of the BMDO elements has specified solid/gel DACS in the CARD. If enough data can be collected the goal of this effort is to develop a CER to estimate first unit production cost. If sufficient data is not available for a CER a methodology to estimate using current CERs modified by technology information is desirable.

Classification: Unclassified (Proprietary)

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Performer: Science Applications International Corporation
6725 Odyssey Drive
Huntsville, AL 35806-3301

Rick Taylor   (205) 971-6432

Resources: Dollars: N/A

Staff-years: 0.2

Schedule: Start: March 1996

End: May 1996

Data Base: A current data base does not exist.

Publications: "TN-96-001 Missile Divert and Attitude Control System," Pending

Category: II.A

Keywords: Government, Estimating, Missiles, EMD, Production, Manufacturing, Data Collection, Data Base, Method, CER

Title: Update Development Engineering Cost Estimating Relationship

Summary: The purpose of this effort is to provide an updated and improved methodology and database which cost analysts can use to estimate the key research and development cost driver, development engineering. This effort will build on BMDO sponsored research in USASSDC and utilize data collection in the latest BMDO database efforts.

Classification: Unclassified

Sponsor: Ballistic Missile Defense Organization (BMDO)
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Performer: Science Applications International Corporation
6725 Odyssey Drive
Huntsville, AL 35806-3301

James Rowan   (205) 971-6436

Resources: Dollars: N/A

Staff-years: 0.5

Schedule: Start: September 1995

End: May 1996

Data Base: Description: The current database exists as Microsoft Excel spreadsheets containing cost, performance and design data for several missile, radar, sensor, and BMC3 systems.

Automation: Microsoft Excel

Publications: "TN-96-002 Development Engineering," Pending

Category: II.A, II.B

Keywords: Government, Estimating, Missiles, Electronic/Avionics, Data Collection, Data Base, Demonstration/Validation, EMD, CPR/CCDR, Method, CER

Title: Laser Weapons Database and CERs

Summary: The purpose of this effort is to provide a methodology and database which cost analysts can use to estimate laser weapons/BMD systems. This effort encompasses the development of a laser WBS/CBS and CERs to estimate Recurring Production first unit cost. This effort revolves around the current estimating work on the Space Based Laser (SBL) system.

Classification: Unclassified

Sponsor: Ballistic Missile Defense Organization (BMDO)
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Performer: Science Applications International Corporation
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G. Todd Honeycutt   (205) 971-6452

Resources: Dollars: N/A

Staff-years: 0.3

Schedule: Start: September 1995

End: May 1996

Data Base: The current database exists as Microsoft Excel spreadsheets.

Publications: "Laser Weapons Database and CERs," Pending

Category: II.A

Keywords: Government, Estimating, Analysis, Reviewing/Monitoring, CERs, Weapon Systems, Space Systems, Electronics/Avionics, Data Base, Demonstration/Validation, EMD, Production, Test and Evaluation, Data Collection, Method

Title: Production Support Factors

Summary: The purpose of this effort is to provide a methodology and database which cost analysts can use to estimate the Recurring Production Support costs, Recurring Engineering, Sustaining Tooling, and Quality control. Although these accounts are not specifically broken out in the BMDO Cost Breakdown Structure they are separate accounts in the Army structure and must be addressed in many BMDO cost reconciliations. To date, this effort is awaiting the finalization of the production database.

Classification: Unclassified

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Tim Bryson (205) 971-6567

Resources: Dollars: N/A

Staff-years: 0.3

Schedule: Start: February 1996

End: May 1996

Data Base: Description: The current database exists as Microsoft Excel spreadsheets containing cost, performance and design data for 13 missile systems. The final data form for this effort is total program in constant FY 88 dollars by BMDO Production/Deployment elements, with breakouts wherever available of the subject cost accounts.

Automation: Microsoft Excel

NAVAL AIR SYSTEMS COMMAND

Name	Naval Air Systems
Address	Naval Air Systems Command Cost Department (AIR-4.2) 1421 Jefferson Davis Highway Arlington, VA 22243-5240
Director	Ronald J. Rosenthal (703) 604-3611
Size	Professional:

Professional:

NAVAIR HQs:	84	NAWC-AD-LAKE:	9
NAWC-AD-IND:	21	NAWC-WD-CL:	13
NAWC-AD-PAX:	29	NAMO:	20

The Cost Department provides life cycle cost estimates, source selection cost evaluation, contractor performance measurement, cost analysis research, and cost/technical/programmatic databases for the purpose of providing a clear and comprehensive understanding of life cycle costs and attendant uncertainties to be used in developing, acquiring, and supporting affordable Naval Aviation Systems.

Primary focus of NAVAIR cost research is as follows:

1. Methods for estimating cost impacts of acquisition reform initiatives

2. Improved methods and databases for estimating major aircraft modifications

3. JAST-related: affordability initiatives and cost analysis/estimating technology upgrades.

4. CER Development: (1) for estimating missile SE/PM costs and (2) Updated Maurer Factor CER which will leverage technology with affordability

5. Models which will provide joint service capability to evaluate aircraft squadron-level O&S costs

6. Improving efficiency in database operations and expanding multi-site capability.

Activity	
Number of projects in process:	5
Average duration of a project:	2 years
Average number of staff members assigned to a project:	1-2
Average number of staff-years expended per project:	1
Percentage of effort conducted by consultants:	75%
Percentage of effort conducted by subcontractors:	0%

Title: Acquisition Reform Strategy Study

Summary: Acquisition streamlining studies historically have identified top level initiatives and used a qualitative approach to identify cost savings. This study identifies low level acquisition requirements, specifically contract data requirements lists (CDRLs) and military specifications and standards, and attempts to quantify cost savings associated with reductions. Includes methodology to analyze contractor proposed streamlining initiatives and government cost estimates for streamlining CDRLs and Mil-Spec/Stds. Research focused on fifteen years of missile development history. (This task appeared in 1995 catalog as NAVAIR-1).

Classification: Unclassified, but may include classified data.

Sponsor: Naval Air Systems Command
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Arlington, VA 22243-1000

Bill Stranges   (703) 604-3611, x2563/DSN 664-3611 x2563

Performer: Management Consulting & Research, Inc., Tysons Corner, VA

Resources: Dollars: FY 95: $125,000

Staff-years:

Schedule: Start: February 1995

End: February 1996

Data Base: N/A

Publications: Study Report

Category: I.A

Keywords: Government, Estimating, Analysis, Weapon Systems, Missiles, EMD, Data Collection, Survey, Study, Method

Title: Naval Aviation Modification Model (NAMM) Data Base

Summary: With current military downsizing, the emphasis in acquisition has been in the area of modifications. The NAMM model will generate a "roughly right" modification cost estimate in a short turn around time. Cost, schedule, technical data collection, review, analysis, validation and verification started in Feb 94. A Microsoft Windows-based run-time Microsoft Access program containing cost, technical, and programmatic data for 40 modification programs is available for operational testing. Future efforts will focus on incorporating feedback from testing, adding data points, and further cross checking of existing data. (This task appeared in 1995 catalog as NAVAIR-2).

Classification: Unclassified

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Jan Young   (703) 604-3440 x2601/DSN 664-3440 x2601

Performer: Naval Air Systems Command
Maria Ponti   (703) 604-3611 x2562

Management Consulting & Research, Inc., Tysons Corner, VA

Resources: Dollars: Staff-years:

FY 94 $204,000
FY 95 $60,000
FY 96 $50,000
FY 97-99 $150,000

Schedule: Start: February 1994

End: September 1999

Data Base: Access 2.0

Publications: Study Report, User's Guide

Category: II.C

Keywords: Government, Estimating, Aircraft, Modification, Production, Data Collection, Data Base, CER

Title: Overhead Study

Summary: Examine the overhead rates of selected defense contractors to identify the variables that determine their magnitude and direction in future years and establish a relationship among the variables for forecasting changes in the future. (This task appeared in 1995 catalog as NAVAIR-3)

Classification: Unclassified

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

    Bill Seeman   (703) 604-3611 x2530/DSN 664-3611 x2530

Performer: Management.Consulting & Research, Inc., Tysons Corner, VA

Resources: Dollars: FY 95: $95,000

    Staff-years:

Schedule: Start: May 1995

    End: September 1995

Data Base: To be developed

Publications: Study Report

Category: II.C

Keywords: Government, Analysis, Estimating, Overhead/Indirect, Data Collection, Method, Mathematical Model, Study

Title:	Operating and Support Study

Summary: The Joint Cost Oriented Resource Estimating (JCORE) model will provide a joint Air Force/Navy capability to evaluate aircraft squadron-level operating and support costs. This model will interface with the Joint Operating and Support Cost Technology Evaluation (JOSTE) Model which analyzes technology at the system, subsystem, and component levels. Enhancements to JCORE and JOSTE models will provide an automated data interface capability, a technology database, and updated aircraft databases. (This task appeared in 1995 catalog as NAVAIR-37)

Classification: Unclassified, but may include proprietary data

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Ron Anderson   (703) 604-3440 x2620/DSN 664-3440 x2620

Performer: Air Force (ASC)
Wright Patterson AFB, OH

Resources:

	Dollars:	Staff-years:
FY 95	$130,000	
FY 96	$235,000	

Schedule: Start: September 1995

End: September 1997

Data Base: To be developed

Publications: Study Report, technical analysis

Category: II.A

Keywords: Government, Estimating, Analysis, Logistics, Life Cycle, Operations and Support, Reliability, Sustainability, Advanced Technology, Data Collection, Survey, Study, Method, Computer Model

Title: Line Shutdown/Restart Costs

Summary: Purpose is to define terminology and cost element structure associated with line shutdown; collect data from aircraft programs; and develop a cost and programmatic database for use in line shutdown estimates. Phase I (complete) produced definitions of line shutdown categories (including termination lot and post production support) and collection of actual cost and technical data for 12 USN and USAF programs. Used cost element structure and data collected to prepare a sufficiency check on the F/A-18 C/D line shutdown budget. Phase II (complete) produced a generic model that associates the cost element structure to line shutdown/restart costs with cost estimating relationships and the data used to develop them. An F/A-18 C/D line shutdown estimate was developed from the study. (This task appeared in 1995 catalog as NAVAIR-6)

Classification: Unclassified

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Ken Anderson (703) 604-3611 x2529/DSN 664-3611 x2529

Performer: Management Consulting & Research, Inc.

Resources:

	Dollars:	Staff-years:
FY 94	$80,000	
FY 95	$80,000	

Schedule: Start: February 1994

End: February 1996

Data Base: To be developed

Publications: Study Report

Category: II.C

Keywords: Government, Estimating, Aircraft, Production, Fixed Costs, Variable Costs, Data Collection, Computer Model

Title:	Historical Data Book Data Base

Summary: With current military downsizing, the emphasis in acquisition has been in the area of modifications. The historical Data Book Data Base effort reviewed available in-house modification cost, technical, and programmatic data, analyzed and evaluated that data, compiled data into databooks, and documented the data so that an analyst could understand and use the data in estimate development. A methodology for systematic extraction, documentation, categorization, and compilation of data from proposals into databooks was developed and used to produce 12 databooks. (This task appeared in 1995 catalog as NAVAIR-7).

Classification: Unclassified

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Jan Young   (703) 604-3440 x2601/DSN 664-3440 x2601

Performer: Naval Air Systems Command
Maria Ponti   (703) 604-3611 x2562

Management Consulting & Research, Inc., Tysons Corner, VA

Resources:

	Dollars:	Staff-years:
FY 95	$60,000	
FY 96	-0-	
FY 97	$60,000	

Schedule: Start: June 1995

End: September 1997

Data Base: To be developed

Publications: Data Books

Category: II.C

Keywords: Government, Estimating, Aircraft, Modification, Production, Data Collection, Data Base, CER

Title: System Engineering/Program Management for EMD and Production

Summary: Phase I (complete): Collected data on a variety of missile systems (7), evaluated several CERs and recommended a "best fit" equation based on total contractor costs. Phase II (On-going): Collect aircraft, avionics, new production, and modification data. Also analyze data from a different perspective (e.g., by contractor). Develop a CER or a process for estimating SE/PM through head counts, direct charges, etc. (This task was included in 1995 catalog as NAVAIR-8)

Classification: Unclassified

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Bill Stranges   (703) 604-3611, x2563/DSN 664-3611 x2563

Performer: Management Consulting & Research, Inc., Tysons Corner, VA

Resources:

	Dollars:	Staff-years:
FY 94	$50,000	
FY 95	$51,000	
FY 96	$75,000	
FY 97	$75,000	

Schedule: Start: August 1994

End: September 1997

Data Base: To be developed

Publications: Study Report

Category: II.A.2

Keywords: Government, Industry, Estimating, Missiles, Aircraft, Statistics/Regression, Data Collection, Method

Title:	Cost Profiles for Weapons Systems

Summary: Develop historical cost profiles, by major WBS element, over time, in terms of constant dollars, escalated dollars, percent of total, and with significant programmatic milestones superimposed. The effort would involve acquiring and developing CCDR, CPR, and supplemental contractor data. Data acquisition would cross services. The product would include both graphic and tabular representations. These data will aid in profiling cost estimates, evaluating cost proposals, and updating estimates at completion. It should further facilitate the technical/cost assessment of the adequacy of the contractor's initial performance measurement baseline. (This task was included in 1994 catalog as NAVAIR-9).

Classification: Unclassified

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Melissa Boord   (703) 604-3611, x2451/DSN 664-3611 x2451

Performer: Management Consulting & Research, Inc., Tysons Corner, VA

Resources: Dollars: FY 94: $55,000

Staff-years:

Schedule: Start: June 1994

End: January 1995

Data Base: To be developed

Publications: Study Report and Data Base

Category: II.B

Keywords: Government, Industry, Analysis, Estimating, Aircraft, Missiles, Electronics/Avionics, EMD, Production, CPR/CCDR, Data Collection, Data Base, Method

Title: Update of Maurer Factor and Propulsion Data Base

Summary: The Maurer Factor CER does not include composite or metal/matrix materials. Such materials are being proposed by engine manufacturers for advanced engines. The updated CER will be a viable tool in leveraging technology for affordability. Cost and technical data will be collected from engine manufacturers, manufacturing/materials technology centers, and Government facilities to modify the existing CER or establish a new CER.

Classification: Unclassified, but may include classified data

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243 1000

Allan Pressman (703) 604-3440, x2663/DSN 664-3440, x2663

Performer: The Bionics Corporation
Ketron Division
Malvern, PA 19355-1370

Resources:

	Dollars:	Staff-years:
FY 95	$75,000	
FY 96	$78,000	

Schedule: Start: April 1995

End: November 1996

Data Base: To be developed

Publications: Study Report

Category: II.A

Keywords: Government, Estimating, Analysis, Propulsion, EMD, Production, Automation, Advanced Technology, Data Collection, Survey, Study, CER, Data Base

Title:	Cost Impacts of Acquisition Reform and Affordability Initiatives

Summary: Identify the initiatives that will affect the major acquisitions of NAVAIR and quantify the savings of successful implementation.
- Identify acquisition reform initiatives which are applicable to NAVAIR programs
- Determine how the acquisition process will be changed and what efforts will be eliminated
- Quantify the savings of work elimination
- Identify possible barriers to implementation
- Identify the risk associated with possible failure of implementation

(This task was included in 1995 catalog as NAVAIR-34)

Classification: Unclassified

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Bill Geoghegan   (703) 604-3611, x2513/DSN 664-3611, x2513

Performer: TASC, Inc.

Resources:

	Dollars:	Staff-years:
FY 95	$174,000	
FY 96	$200,000	
FY 97	$200,000	
FY 98	$250,000	

Schedule: Start: January 1995

End: September 1998

Data Base: To be developed

Publications: Study report including raw cost and technical data, a Cost Impact Matrix by WBS.

Category: I.A

Keywords: Government, Estimating, Analysis, Weapon Systems, Aircraft, EMD, Production, Operations and Support, Life Cycle, Acquisition Strategy, Material, Manufacturing, Data Collection, Survey, Study, Data Base

Title:	Cost Estimating Relationships for Overhead Rates (Helicopter)

Summary: Collect business base data, overhead trends and accounting change information from helicopter manufacturers (Bell, Boeing, and Sikorsky). Normalize data to capture accounting changes. Identify any variables other than business base changes that may affect overhead rates. Analyze data for possible cost estimating relationships between business base and overhead rates. This research should identify fixed and variable overhead pools. Overhead pools to be studied include engineering, manufacturing, materials and G&A. Product: CERs for estimating overhead rates for the three manufacturers in this study. Also, a database that contains business bases, overhead rates, fixed and variable portions of overhead rates, and independent factors (other than business base) that affect overhead rates for helicopter manufacturers.

Classification: Proprietary

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Bill Geoghegan   (703) 604-3611, x2513/DSN 664-3611, x2513

Performer: Management Consulting & Research, Inc., Tysons Corner, VA

Resources: Dollars: FY 97: $202,000

Staff-years: 2

Schedule: Start: November 1997

End: September 1998

Data Base: To be developed

Publications: Study Report

Category: II.C

Keywords: Government, Analysis, Estimating, Overhead/Indirect, Engineering, Manufacturing, Materials, Fixed Costs, Variable Costs, Data Collection, Method, Mathematical Model, Study, Statistics/Regression

Title:	Recurring ECO Study

Summary: Aircraft new production and modification budget sheets have a recurring Engineering Change Order (ECO) line that contains costs for unscheduled required changes in configuration. These costs are at risk for elimination by reviewers since no historical data track can prove how unscheduled changes correlate to program costs. This task would involve researching budgets for aircraft new production and modification recurring Engineering Change Order (ECO) activity per each production lot. Data sources will include STARS runs, budget exhibits, and contractor information such as proposals and contracts. Tasks include a thorough literature search; developing a definition for recurring ECOs; developing a database for ECOs by program, type, and cost; formulating a relationship between ECOs and recurring aircraft costs (discriminate how the ECO trend changes with maturity of production or modification incorporation); and analyzing how ECO type drives the estimate. The expected product is a cost estimating relationship between ECOs and the appropriate components of recurring or total flyaway cost (the relationship should be sensitive to production/ modification maturity).

Classification: Unclassified (Contractor Proprietary)

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Tom Yochim   (703) 604-3611 x2526/DSN 664-3611 x2526
Ken Anderson   (703) 604-3611 x2529/DSN 664-3611 x2529

Performer: Management Consulting & Research, Inc.

Resources:

	Dollars:	Staff-years:
FY 97	$60,000	
FY 98	$60,000	

Schedule: Start: November 1996

End: September 1998

Data Base: To be developed

Publications: Study Report

Category: II.C

Keywords: Government, Analysis, Estimating, Aircraft, Production,
Engineering, Modification, Data Collection, Method, Mathematical
Model, Study, Statistics/Regression

Title: Contract LRE/EAC Growth

Summary: Multi-regressional analysis of PMA's EAC and contractor's LRE growth to determine if a statistical predictor of EAC/LRE is feasible. This analysis would compare all programs in addition to specific types of programs (i.e., ships/planes/avionics). Data collection and analysis will include cost performance data and key programmatic data (e.g., significant program milestones such as PDR, CDR, first flight, etc.). The expected product would be a generic cost growth/overrun CER which, when negotiated target cost is entered, would predict the final EAC for the contract. This CER would also predict the various EACs/LREs along the time span of the contract on a curve against which the current EAC/LRE could be compared much in the way weight growth is tracked on the technical side (i.e., x-axis is time, Y-axis is aircraft weight. Specification weight is a horizontal line. A predicted aircraft weight curve, based on current weight (estimated/ actual) is drawn (and it usually looks like a saucer - high at first, low during the mid-phase of a contract, and higher at the end). Actual a/c (or system) weight is then tracked during the contract (usually at PMRs) to see if weight targets are being met). The product would be a quick way in assisting in the determination of the financial health of the contract, and would also determine the success of the efforts of the program leadership/team in controlling costs.

Classification: Unclassified

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Dave Driver   (703) 604-3611 x2544/DSN 664-3611 x2544

Performer: Management Consulting & Research, Inc., Tysons Corner, VA

or

NAWC-AD PAX

Resources: Dollars: FY: 97

Staff-years: 0.3

Schedule: Start: November 1996

End: September 1997

Data Base:	To be developed
Publications:	Study Report, user's guide
Category:	II.B.
Keywords:	Government, Analysis, Weapon Systems, Aircraft, Helicopters, Missiles, Demonstration/Validation, EMD, Production, CPR/CCDR, Risk/Uncertainty, Data Collection, Method, Mathematical Model, Database, Study, Statistics/Regression

Title: FY97 Cost Data Bank - Acquisition, Storage and Retrieval

Summary: To be sure we have what the analyst needs, now and in the future, and to serve the whole Cost Competency we must:

1. Constantly enhance the collection by:
   - Getting "smarter" about what is needed - learn to anticipate some needs and identify and fill "holes" in our data.
   - Develop processes for acquiring current data as programs are in progress, so we will have estimate backup data, products of cost analysis, and contract data.
   - Locating and aggressively pursuing sources of data, some of which are rapidly disappearing as NAVAIR restructures and people and programs leave.

2. Continue to maintain and upgrade:
   - The library - physical document storage.
   - The hardware - computer, scanner, disk space, backup facilities.
   - The software - up-to-date management tools for accuracy and easy access.

3. Plan and implement connectivity to provide better intra- and inter- site service to all of the Cost Department at NAVAIR.

Classification: Software and manuals Unclassified. Documents in the collection are of any classification up through Secret

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Dr. Alex Shlanta, 420000D

Performer: Vicki Nissley, 427000D, China Lake (619) 927-3258

Resources:

	Dollars:	Staff-years:
FY 97	$155,000	1.0
FY 98	$228,000	1.5
FY 99	$152,000	1.0

Schedule: Start: November 1996

End: September 1999

Data Base: To be developed

Title: Missile Cost Magnitude Analysis

Summary: The purpose of the analysis is to identify and analyze existing cost data, resident in government or support contractor files, which relate to the recurring hardware costs of tactical missiles. While total missile flyaway hardware will be included, the investigation will concentrate on the recurring cost of guidance and control systems. In order to ensure a broad range of technologies, data from all three services will be included. Also, to ensure relatively current technology, the analysis will focus on 1980s and later systems.

Products: The relative magnitude of recurring production hardware and functional cost elements will be provided. It is anticipated that the cost magnitude will be provided by work breakdown structure (WBS) and by functional cost (e.g., manufacturing labor and engineering hours and dollars, material) elements. The analysis will be useful in the identification of those hardware cost-drivers where research and development could provide future cost benefits.

Classification: Unclassified, Proprietary

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Dr. Alex Shlanta, 420000D

Performer: TBD

Resources: Dollars: FY 97: $120,000

Staff-years: 0.9

Schedule: Start: November 1996

End: September 1997

Data Base: To be developed

Publications: Study Report

Category: II.A.1

Keywords: Government, Analysis, Estimating, Weapon Systems, Missiles, Life Cycle, EMD, Data Collection, Database, Study, Method

Title: Air Launched Missile/Bomb (Weapons) O&S Cost Model Enhancement

Summary: The Cost Department Air Weapons O&S Model needs to be restructured to allow for easier usage. By modularizing the model and putting into an Excel Workbook format, all data entry can be centralized to one workbook page, the number of errors can be reduced, and the utilization of the model across the competency can be increased. The modularizing will entail establishing links between the two pages of the workbook.

Classification: Unclassified

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Dr. Alex Shlanta, 420000D

Performer: Steve VanDenover   (619) 927-3258
China Lake

Resources: Dollars: FY 97: $90,000

Staff-years: 0.6

Schedule: Start: November 1996

End: September 1997

Data Base: To be developed

Publications: TBD

Category: II.B

Keywords: Government, Analysis, Estimating, Weapon Systems, Missile, Life Cycle, EMD, Data Collection, Database, Study, Method

Title: Multi-Year Procurement Study

Summary: Because of shrinking defense budgets, both industry and Government have been pursuing changes in the acquisition process in order to secure affordable weapons systems. The intent of this research project is to develop a methodology for estimating multi-year procurement. The research will be initiated by assembling a team of cost and technical analysts. This team will work in unison to identify the areas in which savings will be incurred on the program due to multi-year procurement. The team will then develop a methodology for quantifying these savings by using the most appropriate metrics available (dollars, man months, labor hours, etc.). The expected product from this process is a methodology matrix to be updated and used by all analysts who have multi-year procurement called out in their acquisition plan. This matrix will delineate the resources and processes needed to account for multi-year procurement in a cost estimate. It will also include thorough documentation detailing each step within the process.

Classification: Unclassified (Contractor Proprietary)

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Bill Geoghegan   (703) 604-3611, x2513/DSN 664-3611, x2513

Performer: Management Consulting & Research, Inc., Tysons Corner, VA

Resources: Dollars: FY 97: $150,000

Staff-years:

Schedule: Start: March 1997

End: September 1997

Data Base: To be developed

Publications: TBD

Category: II.D

Title:	Initial Spares Cost Data Collection and Estimating Techniques
Summary:	Develop more responsive tools/methods for estimating the cost of Spares. Develop processes for parametric spares estimating (not limited to percentages of flyaway costs) as an intermediate step between detailed provisioning models and top level parametrics.
Classification:	Unclassified
Sponsor:	Naval Air Systems Command 1421 Jefferson Davis Highway Arlington, VA 22243-1000 Larry Stoll (703) 604-3611, x2511/DSN 664-3611 x2511
Performer:	Naval Aviation Maintenance Office (support from Ketron) Patuxent River, MD Doug Monin

Resources:

	Dollars:	Staff-years:
FY 96	$75,000	1.0
FY 98	$150,000	1.5

Schedule:	Start: June 1996 End: September 1997
Data Base:	To be developed
Publications:	Study Report
Category:	II.A.2
Keywords:	Government, Analysis, Estimating, Spares/Logistics, Operations and Support, Data Collection, Database, Study, Method

Title: Support Equipment Cost Data Collection and Estimating Techniques

Summary: Develop more responsive tools/methods for estimating the cost of Support Equipment. Effort includes collection and review of historical cost and technical data; initial determination of cost and technical drivers; establishment of a technical cost data base; and development of cost estimating techniques, tools/methods, and CERs (if applicable).

Classification: Unclassified

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Larry Stoll (703) 604-3611, x2511/DSN 664-3611 x2511

Performer: Naval Warfare Center (Lakehurst) John Spodofora

Naval Air Warfare Center (PAX) John Melin

Resources:

	Dollars:	Staff-years:
FY 96	$75,000	
FY 98	$125,000	

Schedule: Start: June 1996

End: September 1997

Data Base: To be developed

Publications: Study Report

Category: II.A.2

Keywords: Government, Analysis, Estimating, Spares/Logistics, Operations and Support, Data Collection, Database, Study, Method

Title:	Training/Trainers Cost Data Collection and Estimating Techniques

Summary: Develop new and improve existing tools/methods for estimating the non-recurring and recurring costs Training/Trainers. Effort includes collection and review of historical cost and technical data; initial determination of cost and technical drivers; detailed identification and analysis of cost relationships/drivers; and development of cost estimating techniques, tools/methods, and CERs (if applicable).

Classification: Unclassified

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Larry Stoll   (703) 604-3611, x2511/DSN 664-3611 x2511

Performer: Naval Air Warfare Center (PAX)

John Melin

Resources:

	Dollars:	Staff-years:
FY 96	$100,000	
FY 97	$100,000	

Schedule: Start: June 1996

End: September 1997

Data Base: To be developed

Publications: Study Report

Category: II.A.2

Keywords: Government, Analysis, Estimating, Spares/Logistics, Operations and Support, Data Collection, Database, Study, Method, Training

Title: Major Program Modification Data

Summary: With current military downsizing, the emphasis in acquisition has been in the area of modifications. Data from major modification programs is needed for the potential purpose of developing major modification CERs. In the past we have supported large modification programs, but we have made little, if any, effort to organize any data we may have received. We "reinvent the wheel" each time we need to use this historical data because it is not in a standard format. This effort will produce at least 6 databooks which contain programmatic, cost, and technical information from major modification programs. This product will be used to develop cross-checks for estimates or as the basis for estimates and CERs.

Classification: Unclassified

Sponsor: Naval Air Systems Command
1421 Jefferson Davis Highway
Arlington, VA 22243-1000

Jan Young   (703) 604-3440 x2601/DSN 664-3440 x2601

Performer: Naval Air Systems Command
Maria Ponti   (703) 604-3611 x2562

Management Consulting & Research, Inc., Tysons Corner, VA

Resources:

	Dollars:	Staff-years:
FY 97	$100,000	
FY 98	$100,000	
FY 99	$105,000	

Schedule: Start: October 1997

End: September 1999

Data Base: TBD

Publications: Study Report, User's Guide

Category: II.C

Keywords: Government, Estimating, Aircraft, Modification, Production, Data Collection, Data Base, CER

NAVAL SEA SYSTEMS COMMAND

Name	Cost Estimating and Analysis Division, Comptroller Directorate, Naval Sea Systems Command
Address	2531 Jefferson Davis Highway Arlington, VA 22242-5160
Director	Irvin M. Chewning (703) 602-1209
Size	Professional: 56 Support: 6 Consultants: 0 Subcontractors: 15
Focus	1. Commonality and standardization of ship design and construction processes . Components or Sub-assemblies (Impact on acquisition and O&S costs) 2. Build Strategy Impact on Ship Costs 3. Ship Design Trade-Off Analysis Tools 4. Impacts on Ship Costs of Environmental Requirements 5. Ship and Weapon System Cost Modeling
Activity	Number of projects in process: 18 Average duration of a project: 2 years Average number of staff members assigned to a project: 1 Average number of staff-years expended per project: 2 Percentage of effort conducted by consultants: Percentage of effort conducted by subcontractors: 85%

Title: Product-Oriented Design and Construction (PODAC) Cost Data Collection and Analysis

Summary: Collect product-oriented ship construction cost data and information on several ship classes, build strategy, and ship construction impact resulting from implementation of Affordability Through Commonality (ATC) modules. Analyze behavioral characteristics for Engineering/Integration and Ship Assembly Services.

Classification: Business Sensitive

Sponsor: Naval Sea System Command (SEA 017R)
2531 Jefferson Davis Highway
Arlington, Virginia 22242-5160

Jerome Acks   (703) 602-1308/DSN: 332-1308

Performer: Avondale Shipbuilding, Inc.
Ingalls Shipbuilding, Inc.
Bath Iron Work, Inc.
Newport News Shipbuilding
National Steel and Shipbuilding Company

Naval Surface Warfare Center (211)
Carderock Division
Bethesda, Maryland 20084-5000

Robert Jones   (301)227-4102/DSN: 287-4012

Resources:

	Dollars:	Staff-years:
Prior FY	$667,000	
FY 96	-0-	
FY 97	$240,000	
FY 98	$300,000	
FY 99	$200,000	

Schedule: Start: TBD

End:

Data Base: Return cost data for LSD 44-48, LHD 2, DDG 51, CVN and AOE 6

Publications: 1. Affordability Through Commonality (ATC) Study by Avondale Industries (Phase I)

2. Affordability Through Commonality (ATC) Study by Avondale Industries (Phase II)

3. Affordability Through Commonality (ATC) Study by Ingalls Shipbuilding

4. Affordability Through Commonality (ATC) Study by Bath Iron Works

5. Summary of Shipyard #1 Data: Work Distributions by Trade, ATC Modules Cost Impacts,

6. Cost Estimating Methodologies

Category: II.C

Keywords: Industry, Government, Analysis, Estimating, Ships, Production, Labor, Materials, Overhead/Indirect, Engineering, Manufacturing, WBS, Data Collection, Date Base

Title: Costing Tools in Support of Parametric CAD Tools

Summary: Develop costing tools that interface with CAD tools for designing shipboard distributive systems. These cost estimating procedure will allow system engineers to quickly assess the relative cost of alternative system approaches as the designs are being developed at CAD work stations. Initial efforts are aimed at developing a cost estimating methodology that can be universally applied to distributive system zonal architecture; specifically investigating zonal fire main and HVAC systems. Also conducting a study of the interface needed to connect cost estimating tools and CAD tools.

Classification: Business Sensitive

Sponsor: Naval Sea System Command (SEA 017R)
2531 Jefferson Davis Highway
Arlington, Virginia 22242-5160

Jerome Acks (703) 602-1308/DSN: 332-1308

Performer: Naval Surface Warfare Center (211)
Carderock Division
Bethesda, Maryland 20084-5000

Robert Jones (301)227-4102/DSN: 287-4012

Resources:

	Dollars:	Staff-years:
Prior FY	$150,000	
FY 96	-0-	
FY 97	$150,000	

Schedule: Start: TBD

End:

Data Base: Cost data on a zonal distributed fire main system

Publications: 1. Prototype cost model and documentation for distributive systems report (FY95)

2. Distributive System Zonal Architecture Study Report (FY95)

3. Cost Estimating and CAD Interface Study Report (FY95)

Category: II.B

Title: ATC ILS Model

Summary: Develop a model for analyzing the effects on integrated Logistics Support (ILS) costs of increased equipment commonality and alternative logistic strategies. The model(s) will be used to assess the cost impacts of time-phased introduction of ATC modules and other ATC initiatives on a fleet-wide basis.

Classification: Unclassified

Sponsor: Naval Sea System Command (SEA 017R)
.2531 Jefferson Davis Highway
Arlington, Virginia 22242-5160

Jerome Acks   (703) 602-1308/DSN: 332-1308

Performer: TBD

Resources:

	Dollars:	Staff-years:
Prior FY	-0-	
FY 96	-0-	
FY 97	$75,000	
FY 98	$75,000	
FY 99	$150,000	
FY 00	$150,000	
FY 01	$150,000	

Schedule: Start: TBD

End:

Data Base: None

Publications: Study Report

Category: II.D

Keywords: Government, Analysis, Ships, Operations and Support, HM&E, Data Collection, Mathematical Modeling, Study

Title: ATC LCC/Operating and Support Cost Model

Summary: Develop a toolbox of Operating and Support/Life Cycle Cost Models to support analysis of the use of common modules across classes, and increased equipment commonality. The model(s) will be used to assess the cost impacts of time-phased introduction of ATC modules and other ATC initiatives on a fleet-wide basis. Initial effort was to develop an optimization model, based on acquisition cost, for a selecting a "family" of modules used on a fleet-wide basis. Additional efforts will be to incorporate research and development, and operating and support costs into the optimization model.

Classification: Unclassified

Sponsor: Naval Sea System Command (SEA 017R)
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Performer: Naval Surface Warfare Center (211)
Carderock Division
Bethesda, Maryland 20084-5000

Robert Jones   (301)227-4102/DSN: 287-4012

Resources:

	Dollars:	Staff-years:
Prior FY	$485,000	
FY 96	$155,000	
FY 97	$225,000	
FY 98	$150,000	
FY 99	$150,000	
FY 00	$300,000	
FY 01	$300,000	

Schedule: Start: March 1994

End: TBD

Data Base: None

Publications:
1. "An Optimization Approach to the Cost Assessment of Affordability Through Commonality Systems," Milano, Anjali K., Smith, Timothy C., and Jeffers, Michael F., Jr., 1994.

2. Report on Optimization Model and documentation (FY95)

3. ATC Module Optimization Study Report (FY95)

4. LCC Requirements Study Report (FY95)

5. Zonal Firemain Operating and Support Cost Analysis (FY96)

6. Reverse Osmosis Optimization Study Report (FY96)

7. Steering Gear Optimization Study Report (FY 96)

Category: II.A.2, II.D

Keywords: Government, Analysis, Ships, Operations and Support, Data Collection, Mathematical Modeling, Study

Title: Cost Module for Sealift Ship Version of ASSET

Summary: The objective is to update the cost module of the ASSET ship design synthesis model and tailor it for use in assessing technology developments for sealift ships. The original cost module was originally developed in the late 1970's for surface combatants. The goal of the project is to provide near-immediate cost feedback to design engineers as they use ASSET to design ships. The approach taken is to develop an electronic interface to transfer information between ASSET and a cost model formulated within the Automated Cost Estimating Integrated Tools (ACEIT). Technical information is produced in ASSET and electronically transferred by the ASSET user to ACEIT, which automatically estimates the cost of the ship; the cost estimate is then automatically transferred back to ASSET.

Classification: Unclassified

Sponsor: Naval Sea System Command (SEA 017R)
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Robert Jones   (301)227-4102/DSN: 287-4012

Tecolote Research, Inc.
1700 N. Moore Street, Suite 1400
Rosslyn Center Office Building
Arlington, VA 22209

Alfred Smith   (703) 243-2800

Resources: Dollars: Staff-years:

Prior FY $220,000
FY 96 $60,000

Schedule: Start: February 1994

End: September 1996

Data Base:	None
Publications:	Study Reports
Category:	II.A
Keywords:	Government, Analysis, Review, Ships, Concept Development, Labor, Materials, Overhead/Indirect, Engineering, Acquisition Strategy, Data Collection, Mathematical Modeling, CER, Method, Mathematical Model, Study

Title:	Development of Product-Oriented Cost Estimating Tools

Summary: The goal of this task is to develop a cost estimating methodology based on product-oriented design and construction practices. The primary use of a product-oriented cost model is to perform cost trade-off studies for various shipbuilding processes and designs. In order to better cost current shipbuilding practices, a Product Work Breakdown Structure will be used. The Navy currently develops costs using a system approach, and the CERs for shipbuilding costs are generally developed by shipboard subsystem. If the use of a product work breakdown structure in lieu of a system work breakdown structure requires new CERs, the task will develop the form, fit, and function of these new CERs and correlate them with existing methods.

Classification: Business Sensitive

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Robert Jones   (301)227-4102/DSN: 287-4012

Designers & Planners, Inc.
SPAR, Inc.
University of Michigan Transportation Research Institute
Avondale Shipbuilding, Inc.
National Steel and Shipbuilding Company

Resources: Dollars: Prior FY: $914,000

Staff-years:

Schedule: Start: November 1993

End: December 1996

Data Base: None to Date

Title: Product-Oriented Design and Construction (PODAC) Cost Model

Summary: This cost model will incorporate a Product Work Breakdown Structure and be sensitive to changes in shipbuilding strategies, ship construction process, use of common modules, zonal architectures, and equipment standardization. It will assist in assessment of the cost and affordability of design commonality alternatives, which have potential for reducing acquisition and ownership costs of ships in conjunction with the NAVSEA Affordability Through Commonality (ATC) Program and the Mid-Term Sealift Ship Technology Development Program (MTSSTDP). Concept exploration phase completed with selection of a baseline from conceptual models developed by cost research projects: Development of Product-Oriented Cost Estimating Tools and Near-Term Prototype PODAC model. A prototype is currently being developed by an integrated product team composed of Navy and shipyard personnel and model developers. The prototype model is scheduled for delivery in December 1996.

Classification: Unclassified

Sponsor: Naval Sea System Command (SEA 017R)
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Performer: Naval Surface Warfare Center (211)
Carderock Division
Bethesda, Maryland 20084-5000

Robert Jones   (301)227-4102/DSN: 287-4012

Designers & Planners, Inc.
SPAR, Inc.
University of Michigan Transportation Research Institute
Avondale Shipbuilding, Inc.
National Steel and Shipbuilding Company

Resources:	Dollars:	Staff-years:
Prior FY	$295,000	
FY 96	$990,000	
FY 97	$600,000	
FY 98	$225,000	
FY 99	$300,000	

Schedule:			
Concept Exploration:	Start: Sep 94	End: Sep 95
Prototype Dem/Evaluation	Start: Oct 95	End: Dec 96
Full Scale Development of Model	Start: Jan 97	End: Jun 98

Data Base: Resident within cost model

Publications: Production-Oriented Design And Construction (PODAC) Cost Model Plan Of Action And Milestones and Functional Specification (FY 96)

Category: II.A.2, II.B

Keywords: Government, Estimating, Ships, Production, Labor, Materials, Overhead/Indirect, Engineering, Manufacturing, WBS, Case Study, Survey, Cost/Production Function, Method, Mathematical Model, Study

Title: Private Shipbuilder Overhead Costs Plus Cost Effect of Best Commercial Practices Compared to Mil-Specs

Summary: The objectives of this study are to 1) provide a better understanding of private shipbuilder overhead costs and unique structures; 2) measure the overhead cost changes, including changes from variable to fixed costs; determine the causes, quantify rough effects of new construction techniques and the Sealift Technology Program initiatives; 3) recommend improvements to NAVSEA's forecasting models which project each builder's overhead as a function of annualized employment levels; 4) assess, on a selective basis, the premium surcharge the government pays for invoking Mil-Specs and Federal Acquisition Regulations in defense contracts. Participation by Private Shipbuilders engaged in Navy work is sought by NAVSEA/IDA on a voluntary basis. However, data will be obtained from applicable SUPSHIP Business Offices and Regional DCAA Offices for those builders who do not care to participate.

Classification: Unclassified; however Proprietary and Business Sensitive information will be captured, developed during the study, and protected from disclosure.

Sponsor: OSDPA&E, Program Analysis and Evaluation
Pentagon, Room 2C310
Washington, DC 20301

Mr. Gary Bliss   (703) 695-4348

Performer: IDA
1801 N. Beauregard Street
Alexandria, VA 22311

Stephen J. Balut   (703) 845-2527

Resources:

	Dollars:	Staff-years:
FY 94	$170,000	
FY 95	$340,000	
FY 96	-0-	

Schedule: Start: March 1994

End: August 1997

Data Base: Attributes of database will support Overhead Cost Models
development and improvement.

Publications: TBD

Category: II.A.2, II.D

Keywords: Industry, Estimating, Analysis, Ships, Production,
Overhead/Indirect, Data Collection, Mathematical Modeling, Data
Base

Title: Surface Combatant Performance-Based Life Cycle Cost Model

Summary: The objective of the study is to develop a cost model sensitive to high-level performance parameters for predicting the Life Cycle Cost (LCC) of major surface combatants. The resulting model is envisioned as a tool to provide quick ROM cost estimates of surface combatant ship concepts during the Cost Operational Effectiveness Analysis (COEA) process, or to investigate the cost implications of alternative mission requirements prior to Milestone II. Phase I of the effort , the development of a pre-prototype cost model, is complete. Deliverables to date include a POA&M, Project Definition Report, and pre-prototype model. Further refinement of the production cost model will occur during Phase II. RDT&E and Operating and Support modules , and production model upgrades as needed, will be incorporated into the model during Phase III, scheduled for completion by the end of FY98.

Classification: Classified/Business Sensitive

Sponsor: Naval Sea System Command (SEA 0172)
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Performer: Naval Surface Warfare Center (Code A50)
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Dahlgren, Virginia 22448-5000

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Naval Center for Cost Analysis
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Jim Keller   (703) 604-0286

Naval Surface Warfare Center (Code 211)
Carderock Division (HME systems)
Bethesda, Maryland 20084-5000

Michael Jeffers   (301) 227-1941
LCDR Chris Hargreaves

Resources:

	Dollars:	Staff-years:
Prior FY	$100,000	
FY 96	$120,000	
FY 97	TBD	
FY 98	TBD	

Schedule: Start: June 1993

End: September 1999

Data Base: TBD

Publications: TBD

Category: I.A

Keywords: Government, Estimating, Analysis, Electronic/Avionics, Concept Development, Demonstration/Validation, Labor, Materials, Overhead/Indirect Data collection, Statistics/Regression, CER, Data Base, Method, Computer Model

Title:	Shipbuilding Process Simulation Model

Summary: This project is intended to develop a system dynamics model of the shipbuilding process that can be used to quantify the cost and schedule impacts of ship construction delays, construction process reconfiguration, alternative build strategies, and design trade-off studies. The effort is aimed at producing a model sensitive to the myriad cause-and-effect relationships and the complex web of feedback linkages inherent in the ship production process.

Classification: Unclassified

Sponsor: Naval Sea System Command (SEA 017R)
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Jerome Acks · (703) 602-1308/DSN: 332-1308

Performer: Decision Dynamics, Inc.
8601 Georgia Ave, Suite 806
Silver Spring, MD 10910

Dr. L. Alfred · (301) 565-4040

Resources: Dollars: Prior FY: $535,000

Staff-years:

Schedule: Start: December 1994

End: December 1996

Data Base: None

Publications: 1. Technical Study Report
2. Computer Program Documentation

Category: II.B

Keywords: Government, Industry, Analysis, Estimating, Ships, Labor, Material, Overhead/Indirect, Engineering, Manufacturing, WBS, Mathematical Model, Cost/Production Function, Computer Model

Title: Application of Simulation to Shipbuilding Cost Estimating

Summary: The project will assess the utility of the simulation model developed under the cost research project Shipbuilding Process Simulation Model for estimating shipbuilding costs. The project will develop simulations of the construction process for several ship types. The simulations will be evaluated as to their capability to assess the cost effects of changes to build strategies, erection sequences, and schedules, and of contract modifications. Changes to the simulation software will be made to improve its capability to support ship cost estimating.

Classification: Unclassified

Sponsor: Naval Sea System Command (SEA 017R)
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Jerome Acks   (703) 602-1308/DSN: 332-1308

Performer: Decision Dynamics, Inc.
8601 Georgia Ave, Suite 806
Silver Spring, MD 10910

Dr. L. Alfred   (301) 565-4040

Resources: Dollars: Staff-years:

FY 97 $200,000
FY 98 $400,000
FY 99 $200,000

Schedule: Start: January 1997

End: December 1999

Data Base: None

Publications: Technical Study Reports

Category: II.B

Keywords: Government, Industry, Analysis, Estimating, Ships, Labor, Material, Overhead/Indirect, Engineering, Manufacturing, WBS, Mathematical Model, Cost/Production Function, Computer Model

Title:	Fleet-Wide Cost/Benefit Assessment

Summary: Update and analyze proposed notional fleets and develop criteria for definition of notional fleets, directed at most clearly showing the effects of ATC implementation on a fleet-wide basis. Develop a methodology for conducting return on investment (ROI) analysis for the overall ATC program and for individual ATC modules.

Classification: Business Sensitive

Sponsor: Naval Sea System Command (SEA 017R)
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Performer: Naval Surface Warfare Center (211)
Carderock Division
Bethesda, Maryland 20084-5000

Robert Jones (301)227-4102/DSN: 287-4012

Resources:

	Dollars:	Staff-years:
Prior FY	$150,000	
FY 96	$160,000	
FY 97	$300,000	
FY 98	$50,000	

Schedule: Start: October 1994

End: September 1998

Data Base: None

Publications: Study Report

Category: II.B

Keywords: Industry, Analysis, Estimating, Ships, Production, Labor, Materials, Overhead/Indirect, Engineering, Return On Investment (ROI) Analysis

Title: The Ship Combat-Systems Estimating and Analysis Model

Summary: The Ship Combat-Systems Estimating and Analysis Model (SCEAM) estimates the ship combat system elements for use in total ship cost estimating models. These estimates could be applied by concept designers in the conceptual stages of combat system development. It contains Cost Estimating Relationships (CERs) for a selection of Command and Surveillance and Armament to date and will eventually contain all systems in these two areas. These CERs were developed based on contract data and budget data. The model estimates the contractor production costs including manufacturing and support for the various equipment.

Classification: Currently the model data is Unclassified; however, future data input could require up to Secret classification.

Sponsor: Naval Surface Warfare Center (Code A50)
Dahlgren Division, NSWC/DD
Dahlgren, Virginia 22448-5000

Amanda Cardiel   (540) 653-5235

Performer: Technomics, Inc.
5290 Overpass Road, Suite 206
Santa Barbara, CA 93111   (805) 964-9894

Resources: Dollars: Prior FY: $128,000

Staff-years:

Schedule: Start: August 1991

End: Phase I completed

Data Base: The model is being implemented in Microsoft Excel spreadsheet for the Macintosh and IBM-PC computers. All data required to run the model are contained in spreadsheets. The CERs are derived from budgetary and contract data. The user inputs values for the technical and budgetary parameters required and the model calculates the production cost. This cost includes factors for learning curves, inflation and production support.

Publications: "Cost Estimating and Analysis Model for Advanced Ship Combat Systems," TR-9111-1, August 1992

Category: I.B.1

Keywords: Government, Estimating, Ship Combat Systems, Production, CPR/CCDR, Data Collection, Computer Model

Title: Dynamic Investment Balance Simulator (DIBS) (previously called Planning Under Uncertainty Computer Model)

Summary: DIBS determines future Navy Force structures that are consistent with a range of possible future funding streams. It is a hybrid system which uses Excel spreadsheets and macros for input, output, control of execution and an embedded FORTRAN program as the simulation engine. The model uses a goal seeking algorithm to develop procurement plans which drive force structure towards specified force objectives stated at the SASDT category level, taking into account planned retirements and attrition of existing assets. When topline funding is insufficient to achieve the desired force structure size, the goal seeking algorithm strives to maintain the force structure "shape", i.e., the relative numbers of platforms of various types. O&S costs of the existing assets are estimated as a function of current force structure. Other Navy budgets elements— RDT&E, WPN, etc.—are estimated using statistical relationships. Force structure is modeled at the ship class and aircraft type-model-series level of detail. The model has input variables which allow examination of tradeoffs between acquisition (future force structure) and O&S (maintaining current force structure) in a range of funding environments. And is also capable of exploring more explicit tradeoffs within limited acquisition categories. A separate but related macroeconomic model capable of generating a range of future Navy funding streams was also been developed under this effort. DIBS prototype developed in FY93 was successfully demonstrated. Proposals have been submitted for further development and enhancements.

Classification: Secret

Sponsor: Chief Naval Operations (Code N812)
Pentagon
Washington, DC 20310

Matt Henry   (703) 697-5242

Performer: Naval Surface Warfare Center (211)
Carderock Division, NSWC/CD
Bethesda, Maryland 20084-5000

Michael F. Jeffers, Jr.   (301)227-1941/DSN: 287-1941

Resources:		Dollars:	Staff-years:
	Prior FY	$390,000	
	FY 96	-0-	
	FY 97	$125,000	
	FY 98	$125,000	

Schedule: Start: February 1993 (Prototype: November 1993 Enhancements: April 1995 (New Relationships, Excel 5.0); September 1995)

End: TBD

Data Base: Model contains a force structure database derived from the SASDT and Ship Management Information System, O&S cost factors derived from VAMOSC-Ships/Air, maintained in Excel. To remain current, databases are periodically updated.

Publications: Draft reports of DIBS model and operation. Relationships documented in briefing form.

Category: II.A

Keywords: Government, Forecasting, Weapon Systems, Life Cycle, Acquisition Strategy, Statistics/Regression, Economic Analysis, Uncertainty, Computer Model

Title: Operating and Support (O&S) Costs for Surface Navy Ships Systems

Summary: This effort is directed towards the development of a model to estimate O&S costs of Navy surface ship combat systems to support Milestone 0, I and II Life Cycle Cost studies. Initially, the study will use VAMOSC data to develop preliminary CERs. VAMOSC data only represents a portion of the combat system support cost. The study is now in its third phase, collecting and developing CERs to estimate manning and training costs. Additional phases will be necessary to collect data and develop CERs for hardware maintenance.

Classification: Unclassified (Proprietary)

Sponsor: Naval Surface Warfare Center (Code A50)
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Dahlgren, Virginia 22448-5000

John Kozicki (540) 653-5235

Performer: Technomics
6290 Overpass Road, Suite 206
Santa Barbara, CA 93111

Eugene Waller (805) 964-9894
Susan Jung

Resources: Dollars: Prior FY: $135,000

Staff-years:

Schedule: Start: Complete

End:

Data Base: Currently, VAMOSC data has been used to developed CERs. These initial CERs are being augmented by additional data collection from Navy Training Commands to identify costs of training, including courses materials, simulators, facilities, etc. Upon completion of this phase, maintenance data and costs will be collected to identify depot maintenance efforts which are not included in the VAMOSC data.

Title: Technology-Based Parametric Cost Model

Summary: The objective of this project is to develop a technology driven life cycle cost model for nuclear attack submarines. Using the previously developed nuclear attack submarine, performance-based parametric cost model, this project will join the performance-based analysis with 6.2 Submarine Technology analysis of component level technology goals. The resulting model is envisioned as a tool for providing quick ROM cost estimates of submarine system concepts which include new technology options. The FY96 version of this model will be limited to structural systems technologies and their effect on procurement cost. Ultimately, the model will assess the life cycle cost effects of technologies related to structural systems, signature control, maneuvering and seakeeping, and power and automation.

Classification: Business Sensitive

Sponsor: Naval Surface Warfare Center (0114)
Carderock Division, NSWC/CD
Bethesda, Maryland 20084-5000

Dr. Kihan Kim   (301)227-1378/DSN: 287-1378

Performer: Naval Surface Warfare Center (211)
Carderock Division, NSWC/CD
Bethesda, Maryland 20084-5000

Robert R. Jones   (301)227-4012/DSN: 287-4012

Resources: Dollars: FY 96: $75,000

Staff-years:

Schedule: Start: April 1996

End: September 1996
Pre-prototype, proof-of-concept model developed in FY96.
Additional effort anticipated in FY97/FY98.

Data Base: Submarine Structural Systems

  Description: Historical summary of the technical characteristics of
    submarine structural systems

  Automation: Spreadsheet implementation

Publications: None

Category: II.B

Keywords: Government, Analysis, Ships, Concept Development, Advanced
  Technology, Data Collection, Statistics/Regression, Data Base,
  Computer Model

Title: Nuclear Attack Submarine Performance-Based Life Cycle Cost
Model

Summary: The objective of the study was to develop a cost model sensitive to
performance capabilities which can be used for predicting the Life
Cycle Cost (LCC) of nuclear attack submarines. The model
continues to be used for the New Attack Submarine Cost
Operational Effectiveness Analysis (COEA) process to (1) provide
quick ROM cost estimates of nuclear attack submarine concepts,
and (2) to investigate the cost implications of alternative mission
requirements.

Classification: Classified/Business Sensitive

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Robert Jones   (301)227-4012/DSN: 287-4012
Michael Jeffers
John Trumbule
Mark Greenburg
Christine Whitacre

Resources: Dollars: Prior FY: $270,000

Staff-years:

Schedule: Start: N/A

End: N/A
No new model development in FY96. The model used to support
various cost studies.

Data Base: Submarine Systems

Description: Historical summary of the nuclear submarine cost,
schedule, weight, and performance characteristics.

Automation: Spreadsheet implementation

Publications: 1. "Nuclear Attack Submarine Parametric Analysis Model," CRDKNSWC/SSD-93-10, September 1993, Confidential.

2. "Nuclear Attack Submarine Parametric Analysis Model Addendum—Version 3.0 Documentation," CRDKNSWC/SSD-93-57, September 1993, Confidential.

3. "Performance Based Cost Estimating Models: Nuclear Attack Submarine Parametric Cost Model," Presentation at the Twenty-Ninth Annual Department of Defense Cost Analysis Symposium.

Category: II.B

Keywords: Government, Analysis, Ships, Concept Development, Data Collection, Statistics/Regression, Data Base, Computer Model

Title: Nuclear Attack Submarine System-Based Operations and Support Cost Model

Summary: The objective of the study was to develop a cost model at the system level, sensitive to reliability, maintenance schedule and philosophy, manning, and level of operation which can be used for predicting the Operations and Support (O&S) Cost of nuclear attack submarines. The model may be used to estimate O&S Cost at the system, multiple system, or entire ship level. It may also be used to compare O&S Costs of competing options for a particular system or suite of systems.

Classification: TBD

Sponsor: Naval Sea Systems Command (SEA 92L)
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Performer: Naval Undersea Warfare Center
Newport Division (Code 2094)
Newport, RI 02841

Raymond Moore   (703) 602-0330, ext 208

Cost Engineering Research, Inc.
2011 Crystal Drive
Arlington, VA 22202-3717

Bill Hugo
Bob Craig

Resources:

	Dollars:	Staff-years:
FY 95	$395,000	
FY 96	$117,000	

Schedule: Start: December 1994

End: September 1996

Data Base: Historical database developed from Weapons System File (637 and 688), SUBMEPP Maintenance History Database (637 and 688), Electric Boat Trident Submarine Database (Trident)

Title:	Development of Groupware Prototypes to Connect Design and Estimating Teams

Summary: Integrated Product Teams (IPTs) are being used by NAVSEA for all major ship design programs. This project proposes the development of groupware such as LOTUS Notes to facilitate connectivity between program offices and the cost analysis, design and budget communities. These team members are located in various locations, some remotely to each other. The groupware would permit document management along with sharing of files in a more organized manner than is currently available.

Classification: Business Sensitive

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Stephanie Gustavson   (703) 602-1362/DSN: 332-1362

Performer: TBD

Resources:

	Dollars:	Staff-years:
FY 96	$20,000	
FY 97	$100,000	
FY 98	$100,000	
FY 99	$100,000	
FY 00	TBD	
FY 01	TBD	

Schedule: Start: TBD

End:

Data Base: N/A

Publications: N/A

Category: II.A.2

Keywords: Industry, Government, Analysis, Estimating, Reviewing/Monitoring, Ships, Production, Labor, Materials, Overhead/Indirect, Engineering, Manufacturing, WBS, Data Collection, Date Base

Title: Cost/Schedule Performance Databases

Summary: Electronic Data Interchange (EDI) is being developed to obtain contractor cost and schedule performance data. Upon implementation, a large volume of detailed contractor cost and schedule data will be available in standard electronic format. This project proposes to develop models and databases to collect, analyze, and present this data. These models would allow expansion of analytical capabilities and develop comparisons and metrics by individual system, contracts, contractors, programs, and program offices.

Classification: Business Sensitive

Sponsor: Naval Sea Systems Command (SEA 01762)
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Lisa Pfeiffer   (703) 602-1362/DSN: 332-1362

Performer: TBD

Resources:

	Dollars:	Staff-years:
FY 96	-0-	
FY 97	$100,000	
FY 98	$100,000	
FY 99	$100,000	
FY 00	TBD	
FY 01	TBD	

Schedule: Start: TBD

End:

Data Base: TBD

Publications: TBD

Category: II.B, II.C

Keywords: Industry, Government, Analysis, Estimating, Reviewing/Monitoring, Ships, Production, Labor, Materials, Overhead/Indirect, Engineering, Manufacturing, WBS, Data Collection, Date Base

Title:	Early Warning System Integration (EWS)

Summary: NAVSEA acquisition managers use an on-line service that allows access to contract Cost/Schedule performance status. Two commercially available models, Performance Analyzer (PA) and WINSIGHT, provide detailed lower level and summary levels to managers. There is a need to ensure the interface and integration between EWS and its supporting tools, PA and WINSIGHT. This will provide managers the flexibility to use their adopted analysis tools/models, allow the analysis results to flow to Navy management without interruptions, and allow other organizations to benefit from the use of EWS.

Classification: Business Sensitive

Sponsor: Naval Sea Systems Command (SEA 01762)
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Arlington, VA 22242-5160

John Chen   (703) 602-1361/DSN: 332-1361

Performer: TBD

Resources:

	Dollars:	Staff-years:
FY 96	-0-	
FY 97	$96,000	
FY 98	$96,000	
FY 99	$96,000	
FY 00	TBD	
FY 01	TBD	

Schedule: Start: TBD

End:

Data Base: TBD

Publications: TBD

Category: II.B, II.C

Title: Analysis of Operation and Support (O&S) Costs for Aircraft Carriers

Summary: The objective of the project is to collect aircraft carrier O&S cost data and develop cost estimating relationships that will support costs estimates required for the acquisition and design of aircraft carriers. The data and resulting analysis will also be used to assist the design community in trade-off studies of technology. The study will improve understanding of the composition of aircraft carrier O&S costs. The analysis will identify cost drivers, develop cost estimating relationships, and improve methodologies for estimating costs by compiling and documenting statistical models.

Classification: Business Sensitive

Sponsor: Naval Sea Systems Command (SEA 01712)
2531 Jefferson Davis Highway
Arlington, VA 22242-5160

Steve Moretto   (703) 602-1307/DSN: 332-1307

Performer: Naval Surface Warfare Center
Carderock Division
Philadelphia, PA 19112

Tim Klingersmith   (215) 897-1076

Resources: Dollars: FY 96: $135,000

Staff-years: 1.5

Schedule: Start: January 1996

End: September 1996

Data Base: The data base will consist of Intermediate, Organizational and Depot Level Aircraft Carrier O&S cost data organized at the first and second levels of the standard ship work breakdown structure.

Publications: None

Category: II.A.1, II.A.2, II.B, II.C, II.D

Keywords: Government, Estimating, Analysis, Ships, Production, Labor, Operations and Support, Cost, Statistics/Regression, Study, CER

Title: AACEI Cost Model for Surface Combatants

Summary: The objective of this project is to modify the ASSET/ACEIT/Excel Interface (AACEI) for use on surface combatants. The ASSET ship design synthesis model is the primary engineering tool used by NAVSEA to develop feasibility studies for ships. The current cost model attached to ASSET is developed within the Automated Cost Estimating Integrated Tools (ACEIT) software. An electronic interface is used to transfer information between the two programs. The current cost model is configured for estimating construction cost of sealift ships. This project will modify the model to estimate the end cost (i.e. complete SCN budget) of surface combatants. Capability to account for combat systems costs and programmatic cost will be added. The model will be enhanced to allow evaluation of alternative ship acquisition strategies.

Classification: Unclassified

Sponsor: Naval Sea Systems Command (SEA 01712)
2531 Jefferson Davis Highway
Arlington, VA 22242-5160

John Johnston   (703) 602-1308/DSN: 332-1308

Performer: Naval Surface Warfare Center (211)
Carderock Division
Bethesda, Maryland 20084-5000

Robert Jones   (301)227-4102/DSN: 287-4012

Tecolote Research, Inc.
1700 N. Moore Street, Suite 1400
Rosslyn Center Office Building
Arlington, VA 22209

Alfred Smith   (703) 243-2800

Resources: Dollars: FY 96: $20,000

Staff-years:

Schedule: Start:

End:

Data Base: None

Title: Material Vendor Survey

Summary: The objective of this annual survey is to capture future cost trends. The survey samples some 900 shipboard material and equipment suppliers, requesting their commodity costs for the current fiscal year and their projections of future costs for the next two fiscal years. The annual inflationary growth is determined from the survey results. The results for each reported commodity are grouped according to Ship Work Breakdown Structure (SWBS- Cost Groups 1-9). Indices are developed by 30 September each year and provided to NAVSEA for update of its MATCER file.

Classification: Unclassified

Sponsor: Naval Sea Systems Command (SEA 01712)
2531 Jefferson Davis Highway
Arlington, VA 22242-5160

Richard Forrest   (703) 602-0500/DSN: 332-0500

Performer: NAVSEA Shipbuilding Support Office (NAVSHIPSO)
Norfolk Naval Shipyard Detachment, Code 2900
Philadelphia, PA 19112-5087

Bob Laarkamp

Resources:

Schedule: Start: October each year

End: September each year

Data Base: End use is MATCER Data File update. Backup data is maintained at NAVSHIPSO.

Publications: None

Category: II.A.1

Keywords: Industry, Estimating, Material, Data Collection, Cost Analysis, Data Base

Title: Shipyard Productivity—Measurement and Management

Summary: This project which is ongoing at Avondale Shipyard had two phases. Phase I, which was limited to the sheet metal shop, had three objectives: to gain management and labor acceptance of a cooperative approach to productivity measurement; to demonstrate that a method can actually measure and improve shipbuilding and ship repair productivity; and to develop a workable plan for full scale implementation of the methodology. These objectives have been achieved. Phase II has extended the methodology to the pipe shop, blast and paint, and to the new factory for plate fabrication and assembly. Results to date have been encouraging, for both Avondale and the Navy.

Classification: Unclassified

Sponsor: Naval Sea Systems Command (SEA 0176)
2531 Jefferson Davis Highway
Arlington, VA 22242-5160

Lawrence Kumitis   (703) 602-9001/DSN: 332-9001

Performer: Decision Dynamics, Inc.
8601 Georgia Ave, Suite 806
Silver Spring, MD 10910

Dr. L. Alfred   (301) 565-4040

Resources: Dollars: Prior FY: $567,000

Staff-years:

Schedule: Start: December 1994

End: December 1996

Data Base: Phase II requires the development of a software package to help collect, analyze, and report lost time and productivity at all levels of production. The resulting software package should be readily transferable to other shipyards with a minimum of customization.

Title:	Commercial Specs versus Military Specs

Summary: Investigate and quantify the cost difference between the use of commercial and military specifications in ship construction using experience from US and European shipyards.

Classification: Business Sensitive

Sponsor: Naval Sea System Command (SEA 017R)
2531 Jefferson Davis Highway
Arlington, Virginia 22242-5160

Jerome Acks   (703) 602-1308/DSN: 332-1308

Performer: DIA, Inc.
Three Crystal Park, Room 11
22311 Crystal Drive
Arlington, VA 22202

Don Walter   (703) 920-9200

Resources: Dollars: Prior FY: $180,000

Staff-years:

Schedule: Start: November 1993

End: September 1995

Data Base: None

Publications: "Commercial versus Military Specifications and Standards in US Shipbuilding"

Category: II.C

Keywords: Industry, Government, Estimating, Analysis, Ships, Production, Labor, Materials, Overhead/Indirect, Engineering, Manufacturing, WBS, Case Study, Data Collection, Survey, Cost/Production Function, CER, Method, Mathematical Model, Study

Title: Metrication of the US Shipbuilding Industry

Summary: Investigate, discuss and quantify the cost impact of designing and constructing US Navy ships in metric units of measurement.

Classification: Business Sensitive

Sponsor: Naval Sea System Command (SEA 017R)
2531 Jefferson Davis Highway
Arlington, Virginia 22242-5160

Jerome Acks (703) 602-1308/DSN: 332-1308

Performer: DIA, Inc.
Three Crystal Park, Room 11
22311 Crystal Drive
Arlington, VA 22202

Don Walter (703) 920-9200

Resources: Dollars: Prior FY: $90,000

Staff-years:

Schedule: Start:

End: May 1995

Data Base: None

Publications: Study report: "Metrication of the US Shipbuilding Industry"

Category: II.C

Keywords: Industry, Government, Estimating, Analysis, Ships, Production, Operations and Support, Engineering, Data Collection, Survey, Study

Title: TBMD Missile Model

Summary: This effort is directed towards the development of a model to estimate the various missile designs in the TBMD COEA. The missile cost model is a workbook spreadsheet which operates in Microsoft Excel. This model is complex in that it integrates a number of cost models and individual CERs. Missile subsystem costs are estimated by cost models operating at the assembly level or by CERs estimating total subsystem costs. New CERs have been developed for some of the missile subsystems during this COEA.

Classification: Unclassified (Proprietary)

Sponsor: Naval Surface Warfare Center (Code A50)
Dahlgren Division
Dahlgren, Virginia 22448-5000

Performer: Naval Surface Warfare Center (Code A50)
Dahlgren Division
(Combat systems and Cost Model Integration)
Dahlgren, Virginia 22448-5000

Ted Towles   (540) 653-7369
Amanda Cardiel

Technomics, Inc.
5290 Overpass Road, Suite 206
Santa Barbara, CA 93111

Eugene Waller   (805) 964-9894
Chris Brown

Resources: Dollars: Staff-years:

Prior FY $180,000
FY 96 $20,000

Schedule: Start: February 1995

End: September 1996

Data Base: Data used to create the models and CERs were from various Army and Navy development and production programs which were deemed to be relevant to current technology missiles. There are two seeker hardware cost models resident in the missile cost model, one for infrared and one for RF seekers. These two models are composed of a number of assembly-level CERs. The missile cost model includes CERs for rocket motors, divert/attitude control systems, target detectors, inertial measurement units, GPSs, control sections, wings & fins, batteries, data links, and integration. Besides hardware costs, CERs are used to estimate non-recurring development, development support, and procurement support. All models and CERs were developed between 1992 and 1995.

Publications: TBD

Category: II.C

Keywords: Government, Estimating, Missile, EMD, Test and Evaluation, Production, Statistics, Mathematical Model

Title: Software Maintenance Cost Process Model

Summary: This effort is directed towards the development of a methodology for predicting the Operating and Support (O&S) costs of software maintenance programs that support Milestone 0, I, and II Life Cycle Cost Studies. Earlier phases collected data to develop preliminary relationships and initial structuring of the model. When completed, the Software Life Cycle Cost Process Model will enable software analysts and program managers to estimate the costs to maintain a planned software system over its life span.

Classification:

Sponsor: Naval Surface Warfare Center (Code A50)
Dahlgren Division
Dahlgren, Virginia 22448-5000

Performer: Naval Surface Warfare Center (Code A50)
Dahlgren Division
Dahlgren, Virginia 22448-5000

John Kozicki   (540) 653-7369
Amanda Cardiel

Technomics, Inc.
5290 Overpass Road, Suite 206
Santa Barbara, CA 93111

Eugene Waller   (805) 964-9894
Scott Wied

Resources: Dollars: Staff-years:

Prior FY $139,000
FY 96 $50,000

Schedule: Start: February 1991

End: September 1996

Data Base: Currently, data obtained and analyzed pertain mainly to command and control software written for Naval shipboard systems. Initial data has been collected from FCDSSA on Advance Combat Direction System (ACDS), and from Tomahawk on Tomahawk Weapon Control System (TWCS). In the current phase this data will be augmented with SQQ-89 data, SLQ-32 data, and if possible, Army and NASA command and control software data. The result of these efforts will result in a computer application that creates a Monte Carlo simulation of a proposed software project.

Publications: 1. "Software Life Cycle Data Collection Requirements," May 1992,

2. "Software Life Cycle Process Relationship Development," TR-9204-1, March 1993,

3. "Software Life Cycle Cost Process Model," TR-9411-1, April 1995

Category: II.B

Keywords: Government, Estimating, Maintenance, Simulation

**AIR FORCE MATERIEL COMMAND/
AERONAUTICAL SYSTEMS CENTER**

Name	Cost Division Directorate of Financial Management and Comptroller Air Force Materiel Command/Aeronautical Systems Center
Address	ASC/FMC, Bldg. 11A 1970 Third Street, Suite 6 Wright-Patterson AFB, OH 45433-7213
Director	Ms. Julia Leet Phone: (513) 255-6347 Fax: (513) 476-7695

Size

Professional:	53
Support:	5
Consultants:	0
Subcontractors:	0

Focus Cost Estimating and Research, Resources Analysis (Source Selection Policy and Estimates); Scheduling; Performance Measurement Systems and Analysis; Independent Review Team support; Integrated Risk Management; Program Support Cost Operational Effectiveness Analysis

Activity

Number of projects in process:	1
Average duration of a project:	Dependent on available resources
Average number of staff members assigned to a project:	Dependent on available resources
Average number of staff-years expended per project:	0.5
Percentage of effort conducted by consultants:	0%
Percentage of effort conducted by subcontractors:	0%

Title: Acquisition Reform Cost Study

Summary: Dr. Kaminski [OUSD (Acquisition and Technology)] and Mr. Money (SAF/AQ) are asking program managers to estimate cost savings and cost avoidance as a result of acquisition reform initiatives. These estimates must withstand the scrutiny of Congress and GAO. Cost analysts need a tool or process to assess the impact of acquisition reform initiatives.

Classification: Unclassified

Sponsor: ASC/FMCE, WPAFB, OH

Ms. Julia Leet   (513) 255-6347

Performer: ASC/FMCE

Mr. Scott Graham   (513) 255-6347

Resources: Dollars:

Staff-years:

Schedule: Start: March 1996

End: December 1996

Data Base: None

Publications: TBD

Category: I.A

Keywords: Government, Industry, Estimating, Analysis, Programming, Budgeting, Weapon Systems, Life Cycle, Acquisition Strategy, Risk/Uncertainty, Data Collection, Survey, Case Study, Data Base, Review, CER

Title: Component Breakout Analysis Tool for Acquisition

Summary: A multi functional Integrated Product Team (IPT) was formed to study the "hidden" costs to the government of performing Component Breakout during weapon system acquisition. The team researched regulations and issues surrounding the requirement for Component Breakout analysis on an annual basis. The team also conducted interviews with system program offices at Aeronautical Systems Center (ASC), Electronics Systems Center (ESC), and Space and Missile Center (SMC) to understand the approaches taken regarding the component breakout analysis process. The focus of this team was breakout of a component to the Original Equipment Manufacturer (OEM) during the acquisition cycle. A separate team, led by SA-ALC, was commissioned to study the issue of spare parts breakout. The end product of the acquisition Component Breakout IPT is a cost model that assists a program office in understanding the tradeoff between the expected savings from breakout of a component to the OEM, and the increased costs to the government due to increased manpower (required to manage the new contract) and the government's assumption of risk due to the breakout process.

Classification: Unclassified

Sponsor: AFMC/DR

Performer: ASC/FMCE

Ms. Julia Leet, IPT Lead   (513) 255-6347
Ms. Linda Turner   (513) 255-6347

Resources: Dollars: $1,000

Staff-years: 0.75

Schedule: Start: February 1995

End: March 1996

Data Base: None

Automation: Excel 5.0 spreadsheet cost model; Microsoft Word definitions and instructions.

Publications: Component Breakout cost model placed on HQ AFMC Home Page, World Wide Web.

Category: II.C

Keywords: Government, Estimating, Weapon Systems, Manpower/Personnel, EMD, Production, Labor, Risk/Uncertainty, Survey, Case Study, Mathematical Modeling, Computer Model

Title:	Advanced Aircraft Cost Forecasting Model (AACFM)

Summary: This model primarily estimates life cycle costs in an early system environment. It is similar to PRICE in estimating systems and major subsystems. However, it includes unique O&S and Risk cost modeling features. The database is currently unclassified, but is easy to populate with classified by the ultimate user. The model includes a published paper, briefing, and a User's Guide. AACFM is hosted in Microsoft ACCESS 2.0 and runs on Windows 3.1. The model requires at least a 486 Personal Computer with at least 8 megabytes of Random Access Memory (RAM) to run efficiently.

Classification: Unclassified

Sponsor: ASC/XRPC

Mr. Patrick Cyrus (513) 255-8060

Performer: Econ, Incorporated
4020 Moorpark Avenue
San Jose, CA 95117

Mr. Charles Hopkins   (408) 249-6364 (Home Office)
                             (703) 631-0832 (temporary)

Econ, Incorporated
711 West Bay Area Blvd.
Webster, TX 77598

Mr. Robert Phillips

Resources: Dollars: $745,542 (Phase IIA and IIB)

Staff-years: 4,475 (total labor hours)

Schedule: Start: April 1994 (Phase IIB)

End: January 1996 (Phase IIB)

Data Base: **System Level:** Program go-ahead data, First Flight date, Year of Initial Operating Capability (IOC), Number of Test Aircraft, Number of Production Aircraft, State of the Art, Base Complexity, Complexity Growth, Calculated Complexity, Weight Specification or Operating Environment, Integration Factors (EMD, Production), Base year **Hardware Level:** Number of engines per aircraft, Aircraft empty weight, Subsystem state-of-art rating, Subsystem operating environment, 100th unit cost **Software Level:** Software Complexity, Software function, Percent new design, Number of lines of code, Software certification level, Operating environment, Composite hourly rate for labor **Integration:** Development integration complexity, Production integration complexity

Publications: Draft User manual and briefing

Category: II.B

Keywords: Government, Estimating, Electronics/Avionics, Weapon Systems, Life Cycle, Engineering, Manufacturing, Mathematical Modeling

AIR FORCE SPACE AND MISSILE SYSTEMS CENTER

Name	Air Force Space and Missile Systems Center Cost Division
Address	SMC/FMC 2430 E. El Segundo Boulevard, Suite 2010 Los Angeles AFB, CA 90278-4687
Director	Mr. David Hansen (310) 363-0139
Size	Professional: 5 Support: Consultants: 3 (support contractors) Subcontractors: 0
Focus	Systems costing, life cycle costs, space systems, missile systems ground systems, future systems planning costs, software sizing/costing
Activity	Number of projects in process: 5 Average duration of a project: 3 years Average number of staff members assigned to a project: 1 Average number of staff-years expended per project: 0.2 Percentage of effort conducted by consultants: 90% Percentage of effort conducted by subcontractors: 0%

Title:	Hazardous Materials Disposal Cost Study

Summary: The OSD Cost Analysis Improvement Group (CAIG) is requiring all programs to include the costs of disposing of hazardous waste in their program life cycle cost estimates. Few programs have included these costs in their estimates and some do not include all of the costs. This is the third part of a study to define the types of costs related to hazardous waste disposal, determine what part of the life cycle will be impacted by these costs, and develop CERs to estimate those costs. This task will consist of updating the developed handbook and training program with changes imposed by higher headquarters or DoD level regulatory changes and conduct training in conjunction with the use of the cost handbook.

Classification: Unclassified

Sponsor: SMC/FMC

Performer: SMC/FMC

FFRDC: Aerospace Corporation

Contractor: EER Systems, Inc.

Researcher: Ms Mary Helen Alverio   (310) 363-2822

Resources: Dollars: $163,094 (prior years)

FY 96: $63,000

Schedule: Start: March 1996

End: November 1996

Data Base: Handbook of cost methodologies for estimating the cost of environmental mitigation strategies, hazardous material cleanup, and planning for use of non-hazardous materials.

Publications: Space and Missile Systems Center Environmental Cost Handbook

Author: Space and Missile Systems Center/FMC

Category: I.C, II.C

Keywords: Government, Estimating, Space Systems, Data Collection, Life Cycle Cost, Missiles, Environment, Study

Title:	Operations and Support (O&S) Database

Summary: Populate fields of database and modify automated stand alone tool to work in windows. Database contains data that can be used for analogy estimates, calibration efforts, and CER development, and is compatible with current Air Force computer systems.

Classification: Unclassified (Proprietary and Non-Proprietary Versions)

Sponsor: SMC/FMC

Performer: SMC/FMC

FFRDC: Aerospace Corporation

Contractor: Management Consulting and Research, Inc.
Cost Management Systems, Inc.

Researcher: Ms Shirley Tinkler   (310) 363-5057

Resources: Dollars: $706,000 (prior years)

FY 96 $90,000

Schedule: Start: September 1995

End: August 1996

Data Base: SMC Operations and Support (O&S) Database

Description: Contains cost and technical data for O&S space, ground mobile, and airborne platforms. Hosted in dBase IV.

Automation: TBD

Publications: 1. SMC O&S Database Final Report (Phase 2)

2. OSDB Users Manual

Author: Space and Missile Systems Center/FMC

Category: II.A.2

Keywords: Government, Estimating, Space Systems, Operating and Support, WBS, Database, Size, Data Collection, Methodology

Title: Passive Sensor Cost Model Update

Summary: The methods for estimating space sensor payloads (passive sensors, e.g., infrared) need to be updated. Subsystems reviewed were: focal plane arrays; optical telescope assemblies; cryogenic coolers; servo electronics; gimbals and structures; star sensors; power supplies; and sensor integration, assembly and test.

Classification: Unclassified (Proprietary database separately bound)

Sponsor: SMC/FMC

Performer: SMC/FMC

Contractor: EER Systems, Inc.

Researcher: Ms Phu Nguyen   (310) 363-0071

Resources: Dollars: $580,000 (prior years)

FY 96: $100,000

Schedule: Start: October 1995

End: September 1996

Data Base: Sensor Database

Description: Contains cost and technical and programmatic data by WBS at the sensor component level

Automation: TBD

Publications: Passive Sensor Cost Model

Author: Space and Missile Systems Center/FMC

Category: II.A.2

Keywords: Government, Estimating, EMD, Space Systems, Production, WBS, CER, Statistics/Regression, Database, Method, Data Collection, Survey, Electronics/ Avionics

Title: Software Database (Phase VII)

Summary: Maintained the SMC Software Database by adding new data. Modified automated stand alone tool to work in windows. Normalized missing parameters. DoD's largest Software database.

Classification: Unclassified (Proprietary and Non-Proprietary Versions)

Sponsor: SMC/FMC

Performer: SMC/FMC

FFRDC: Aerospace Corporation

Contractor: Management Consulting and Research, Inc.
Cost Management Systems, Inc.
Galorath Associates, Inc.

Researcher: Ms Shirley Tinkler (310) 363-5057

Resources: Dollars: $861,000 (prior years)

FY 96: $50,000

Schedule: Start: September 1995

End: August 1996

Data Base: SMC Software Database

Description: Contains cost and sizing data from space, ground mobile, and airborne platforms in dBase IV

Automation: PC

Publications: 1. SMC Software Database Final Report (Phase VI)

2. SWDB Users Manual

Author: Space and Missile Systems Center/FMC

Category: II.A.2

Keywords: Government, Estimating, Space Systems, WBS, Data Base, EMD, Size, Data Collection, Methodology, Software, Production, Modification

Title:	Unmanned Spacecraft Cost Model (USCM) Update
Summary:	Update the 7th Edition (1994) of the model with developing, validating, documenting new CERs, and obtaining new data points.
Classification:	Unclassified (Proprietary database separately bound)
Sponsor:	SMC/FMC
Performer:	SMC/FMC
	FFRDC: Aerospace Corporation
	Contractor: Tecolote Research, Inc.
	Researcher: Ms Phu Nguyen (310) 363-0071
Resources:	Dollars: $1,429,000 (prior years)
	FY 96: $100,000
Schedule:	Start: June 1995
	End: June 1996
Data Base:	USCM Database
	Description: Includes cost, technical, and programmatic data by WBS at the spacecraft component level. The database is contained in Lotus spreadsheets and dBase IV.
	Automation: PC
Publications:	Unmanned Spacecraft Cost Model, 7th Edition
	Author: Space and Missile Systems Center/FMC
Category:	II.A.2, II.B
Keywords:	Government, Estimating, EMD, Space Systems, Production, WBS, CER, Mathematical Modeling, Statistics/Regression, Database, Method, Mathematical Model

**AIR FORCE MATERIEL COMMAND/
HUMAN SYSTEMS CENTER**

Name	Weapons System Pollution Prevention Division (HSC/EMP) Human Systems Center, Air Force Material Command
Address	8213 14th Street Brooks AFB, TX 78235-5246
Director	Mr. David Zapata (210) 536-5120
Size	Professional: 23 (authorized) 22 (assigned) Support: 4 (authorized) 4 (assigned) Consultants: 0 Subcontractors: 0
Focus	Development and fielding of management tools and training designed to assist Air Force Single Managers in institutionalizing pollution prevention in Air Force weapon systems. Provide and information exchange service to the Air Force Weapon System community to aid in complying with Federally mandated ODC reduction goals.
Activity	Number of projects in process: 7
	Average duration of a project: 3 days to 3 years
	Average number of staff members assigned to a project: 1-6
	Average number of staff-years expended per project: 3 days to 3 years
	Percentage of effort conducted by consultants: 70%
	Percentage of effort conducted by subcontractors: 0%

Title: Hazardous Materials Cost Trade-Off Analysis Tool

Summary: One of two cost estimating modules in the HazMat Model. This tool is weapon system oriented, chemical specific by process within the production, operation and support and decommissioning phases of a weapon system; surfaces the costs of protecting human health and the environment that were previously hidden in overhead costs; provides program offices and engineers the capability to perform cost trade-off studies between hazardous and less hazardous materials; provides data to document life cycle cost impacts of using hazardous materials on a weapon system; the environmental cost data can be used to support decision making for pollution prevention programs.

Classification: Unclassified

Sponsor: HSC/EMP
8213 14th Street
Brooks AFB TX

Ms. Betty S. West   (210) 536-5121

Performer: TASC

Mr. John Long   (513) 426-1040

Resources:

	Dollars:	Staff-years:
FY 90	$475,758	2.6
FY 91	$655,880	3.8
FY 92	$456,060	2.9
FY 93	$1,207,067	6.5
FY 95	$863,721	4.4

Schedule: Start: 1990

End: June 1996

Data Base: HAZMAT

Description: Hazardous materials cost element data for production, maintenance and decommissioning of weapon systems (F-16, F-15, B-1, C-130, Titan IV, Black Hawk, Mark 50, M1-A1)

Automation: Microsoft Visual Basic with Access Database

B-301

Title: Manufacturing and Maintenance Process Cost Analysis Tool

Summary: One of two cost estimating modules in the HazMat Model. This tool is process oriented; estimates the total costs for a process life cycle; captures the environmental costs as a subset of the direct and indirect costs of a process; provides program offices and engineers the capability to perform process analyses and cost trade-off studies between hazardous and less hazardous materials inputs into a process; provides data to document the cost impacts of using hazardous materials in a manufacturing or maintenance process; the environmental cost data can be used to support decision making in pollution prevention programs.

Classification: Unclassified

Sponsor: HSC/EMP
8213 14th Street
Brooks AFB TX

Ms. Betty S. West   (210) 536-5121

Performer: Parsons Engineering Science, Inc.

Mr. Mary Hopkins   (705) 591-1305

Resources:

	Dollars:	Staff-years:
FY 95	$338,524	1.3
FY 91	$327,000	2.0

Schedule: Start: April 1995

End: 1998

Data Base: HAZMAT

Description: Direct and indirect cost data for five common maintenance processes at Air Force Logistics Centers

Automation: Microsoft Visual Basic with Access Database

Publications: Data Report and Architecture Report for Manufacturing and Maintenance Process Cost Analysis Tool

Category: I.C, II.A.1, II.A.2

AIR FORCE ELECTRONICS SYSTEMS CENTER

Name	Cost Training & Tools, Cost Division (ESC/FMC) Electronic Systems Center, Air Force Materiel Command
Address	9 Eglin Street Hanscom AFB, MA 01731-2117
Director	Ms. Ellen Coakley (617) 377-5226
Chief	Mrs. Margaret Weech (617) 377-3919
Size	Professional: 6 Support: 2 Consultants: 0 Subcontractors: 0
Focus	Development and fielding of cost estimating tools and databases for C4I systems. Responsibility for searching out and reviewing the latest C4I cost and schedule estimating tools available from other government agencies and commercial sources and evaluating for potential use at ESC. Providing timely, quality cost estimating training to ESC analysts and assuring they are up-to-date on new methodologies, tools, estimating approaches and policies.

Title: Labor Rate Estimating/Evaluation Tool

Summary: This tool can be used to develop cost estimates or evaluate proposed labor rates. It can be used to evaluate the likelihood that an Officer's proposed salaries will be able to attract and maintain quality of direct labor required to satisfactorily perform an IDIQ Service Contract or other type contracts where labor rates are involved. The source data for this analysis tool comes from periodic Bureau of Labor Statistics (BLS) salary surveys, which include specific Labor Category Definitions and associated Direct Labor Rates. Model include Direct Labor Rates per hour for Engineers, Computer Programmers, Computer System Analysts, Computer System Analysts Supervisor/Manager, and Engineering Technicians by geographical area. Direct labor rates for additional labor categories can be added.

Classification: Unclassified

Sponsor: ESC/FMC

Performer: ESC/FMC

Ellen Coakley

Resources: Dollars:

Staff-years:

Schedule: Start: January 1996

End: March 1996

Data Base:

Publications:

Category: II.B

Keywords: Government, Estimating, Analysis, Weapon System, Manpower/Personnel, Labor, Survey, Computer Model

Title: Use of Automated Cost Estimator-Integrated Tools (ACE-IT) for Cost Proposal Evaluation and the Storage of Cost/Schedule/Technical Data

Summary: ACE-IT can be used as an analysis tool to evaluate Cost Proposals. The Cost Proposal data would be loaded into ACE-IT's Automated Cost Data Base (ACDB) from computer disk or by electronic transfer and then analyzed in CO$TAT (the statistics module) with the resulting trends and analyses stored in the ACE Knowledge Base. In addition to using ACE for proposal evaluation of the instant contract, ACE-IT would be used to store proposal data for all offerors and to develop trend factors and algorithms by contractor. After contract award, ACE-IT's database (ACDB) can also be used as a repository for Cost/Schedule/Technical data received by electronic transfer from the contractor.

Classification: Unclassified

Sponsor: ESC/FMC

Performer: ESC/FMC

Ellen Coakley

Resources: Dollars:

Staff-years:

Schedule: Start: May 1996

End:

Data Base: Description: Data from Cost Proposals and Cost/Schedule/Technical data for on-contract efforts

Automation: PC ACE-IT Windows-based Automated Cost Data Base

Publications:

Category: II.B

Keywords: Government, Estimating, Analysis, Weapons Systems, Data Collection, Data Base

THE RAND CORPORATION

Name	RAND Corporation
	(No formal cost research organization exists at RAND. Analysts involved in military cost research are divided between two separate departments: Human & Material Resources Policy (HMRP), and Defense Planning and Analysis (DPA). Adele Palmer, Associate Corporate Research Manager (HMRP), has responsibility for RAND's cost analysis activities.
Address	1700 Main Street Santa Monica, CA 90407-2138
Director	Fred Timson (310) 0411, ext. 7802
Size	Professional: 6
	Support: .5
	Consultants: 2 (0.2 man-years)
	Subcontractors: 0
Focus	Force costing, O&S costing, system costing, space systems
Activity	Number of projects in process: 6
	Average duration of a project: 1-2 year
	Average number of staff members assigned to a project: 1-3
	Average number of staff-years expended per project: .5 to 4
	Percentage of effort conducted by consultants: < 5%
	Percentage of effort conducted by subcontractors: 0%

Title: Understanding the Sources of Cost Growth in Weapon Systems

Summary: Building on past research, the objectives are to (1) continuously update RAND's cost growth database and (2) identify and evaluate factors affecting cost growth. [This task appeared in the 1995 catalog as PA&E-5]

Classification: Unclassified

Sponsor: OD (PA&E)

Performer: RAND

Fred Timson   (310) 393-0411
Jeff Drezner   (310) 393-0411

Resources: Dollars:

Staff-years:

Schedule: Start: January 1991

End: Continuing

Data Base: Defense System Cost Performance Database

Description: Cost growth histories and assorted program data on 246 weapon systems through December 1994

Automation: PC (Excel)

Publications: "The Defense System Cost Performance Database: Cost Growth Analysis Using SARs," DRR-149-PA&E, Norton, Drezner, Jarvaise, January 1993, Unclassified (distribution of RAND drafts controlled by sponsor)

Category: II.A.1, II.A.2

Keywords: Government, Analysis, Risk/Uncertainty, Data Collection, Data Base, Study

Title:	Force Structure and Support Infrastructure Costing for Program Analysis and Evaluation

Summary: The objective of this research is to design, develop, and implement an automated system for costing force structure and related changes in defense programs. The project will include recommendations for developing a centralized database within PA&E to support the costing system. [This task appeared in the 1995 catalog as PA&E-6]

Classification: Unclassified

Sponsor: OD (PA&E)

Performer: RAND

Adele Palmer	(310) 393-0411 (Co-PI)
Jim Bigelow	(310) 393-0411 (Co-PI)
Manuel Carrillo	(310) 393-0411
Gary Massey	(310) 393-0411)

Resources: Dollars:

Staff-years:

Schedule: Start: December 1990

End: Continuing

Data Base:

Publications: "The Force Structure Costing Project: An Introductory Briefing," WD-5252-PA&E, Adele Palmer, December 1990, Unclassified (distribution of RAND WDs controlled by sponsor)

Category: II.C

Keywords: Government, Estimating, Analysis, Programming, Forces, Expert System, Method, Computer Model

Title: Military Aircraft Cost Data Base

Summary: The objective of this project is to develop a historical aircraft data base in collaboration with the other services. The data base will contain functional labor and material costs for EMD and each production buy, broken out by airframe section/subsystem. CFE avionics will be broken out by major system (e.g. radar, EW, etc.) to the extent possible. Weight and descriptive data will be obtained to reflect various model changes. Programmatic data will include schedules, quantities, model/block numbers, and EMD program characteristics. Focus is on F-14, F-15, F-16, F/A-18, and AV-8B. [This task appeared in the 1995 catalog as RAND-2.]

Classification: Unclassified, Contractor Proprietary

Sponsor: Air Force Cost Analysis Agency

Performer: RAND

Fred Timson   (310) 393-0411
Rob Leonard   (310) 393-0411

Resources: Dollars:

Staff-years:

Schedule: Start: July 1993

End: November 1995

Data Base: Automation: PC (Excel)

Publications: "Military Aircraft Cost Data Base: AV-8B, F-14, F-15, F-16 and F/A-18," PM(L)-496-AF, R.S. Leonard, J.E. Manker and F.S. Timson, November 1995, Unclassified/Proprietary Information (distribution of RAND PMs controlled by sponsor)

Category: I.D, II.A.1

Keywords: Industry, Monitoring, Aircraft, Airframe, Electronics/Avionics, EMD, Production, Labor, Material, WBS, Data Collection, Data Base

Title: Weapon System Cost Drivers

Summary: A greatly reduced defense business base, creating the prospect of many fewer defense programs and much lower production rates, has dramatically changed the acquisition environment. These changes are occurring even as a "manufacturing revolution" is underway, as a result of new management and "factory floor" techniques such as concurrent engineering, computerized production, lean manufacturing and others. These changes raise the question of which factors are likely to drive the costs of future military aircraft, particularly the F-16 replacement. After identifying aircraft components that are likely to be major cost drivers, the study will examine changes to "factory floor" processes with the intent of identifying cost estimating techniques that are no longer appropriate. Approaches for tailoring, modifying or manipulating historical data to reflect current and future environments will be explored. [This task appeared in the 1995 catalog as RAND-3.]

Classification: Unclassified

Sponsor: Office of the Assistant Secretary of the Air Force
(Financial Management and Comptroller)

Performer: RAND

Dennis Smallwood   (310) 393-0411

Resources: Dollars:

Staff-years:

Schedule: Start: December 1994

End: June 1996

Data Base:

Publications: None

Category: II.D

Keywords: Government, Estimating, Aircraft, EMD, Production, Labor, Material, Overhead/Indirect, Statistics/Regression, Study

Title: Air Force O&S and Force Cost Analysis

Summary: This study encompasses improved resource/cost modeling, data base development, and development of data management tools to support long range force structure planning and analysis aimed at determining the size and composition of future Air Forces. [This task appeared in the 1995 catalog as RAND-4]

Classification: Unclassified

Sponsor: AF/XOF

Performer: RAND

Gary Massey (310) 393-0411

Resources: Dollars:

Staff-years:

Schedule: Start: October 1993

End: September 1995

Data Base: Description: Data base tools to extract and consolidate data from AF PPBS data bases and resource/cost factor tables (AFR 65-203 and other table, to be developed) to support force resource/cost models.

Automation: UNIX workstation, DOS and Macintosh

Publications: None

Category: II.A.1, II.A.2, II.C

Keywords: Government, Analysis, Forces, Operations and Support, Life Cycle, Method, Computer Model

THE AEROSPACE CORPORATION

Name	The Aerospace Corporation Mission and Systems Development Department
Address	2350 E. El Segundo Boulevard El Segundo, CA 90245 Mail Station: M4/021 P.O. Box 92957 Los Angeles, CA 90009-2957
Director	Ms. Susan E. Jones Phone: (310) 336-8576 Fax: (310) 336-5581
Size	Professional: 15 Support: 1 Consultants: 1,000 Aerospace Corporation Engineers Subcontractors: 0
Focus	Acquisition reform, commercial practices, cost as an independent variable, space-system cost modeling, cost-risk analysis, schedule-risk analysis, statistical analysis.
Activity	Number of projects in process: 12 Average duration of a project: 1 year Average number of staff members assigned to a project: 2 Average number of staff-years expended per project: 1.0 Percentage of effort conducted by consultants: 20% Aerospace Corp. Engineers Percentage of effort conducted by subcontractors: 0%

Title:	Costs of Space, Launch, and Ground Systems
Summary:	Historical costs of space, launch, and ground systems, including vehicles, payloads, launch processing, delays, failures, cost overruns, etc.
Classification:	Unclassified; Government-only; Contractor-Proprietary Data.
Sponsor:	The Aerospace Corporation's Research Program and C.L. Whitehair, Vice President, Space Launch Operations The Aerospace Corporation
Performer:	The Aerospace Corporation P.O. Box 92957, MS: M4/021 Los Angeles, CA 90009-2957
	S. A. Book (310) 336-8655
Resources:	Dollars: FY96: $100,000
	Staff-years: FY96: 0.6
Schedule:	Start: Ongoing updates since 1987
	End:
Data Base:	Contractor-Proprietary
Publications:	"Costs of Space and Launch Systems," The Aerospace Corporation, Corporate Briefing ("The Whitehair Study").
Category:	II.A
Keywords:	Government, Policy, Space Systems, Life Cycle, Acquisition Strategy, Data Collection, Case Study, Data Base, Study

Title: Validation Testing of Commercial Risk-Analysis Software

Summary: Government validation testing of commercial risk-analysis software products is an ongoing research effort. Some test cases investigate handling of simple, routine tasks, others "push the envelope" of their limitations and advertising Currently under consideration for test is RI$K Version 2.2 developed by Tecolote Research, Inc. Deficiencies are specifically noted in controlled-access validation testing reports delivered to SMC/FMC locally for forwarding to AFCAA and SAF/FM. Explanations of deficiencies may be passed on to developers by AF personnel at their option.

Classification: Unclassified

Sponsor: AF Space and Missile Systems Center/FMC acting also on behalf of Air Force Cost Analysis Agency (AFCAA) and Office of Secretary of the Air Force/Financial Management (SAF/FM)

Performer: The Aerospace Corporation
P.O. Box 92957, MS: M4/021
Los Angeles, CA 90009-2957

S. A. Book   (310) 336-8655
A. J. Matthews   (310) 336-1150

Resources: Dollars: $20,000

Staff-years: 0.10

Schedule: Start: October 1995

End: September 1996

Data Base: None

Publications: 1. Book, S.A. and P.H. Young, "Validation Report on PLAN™ Risk Modeling Software," The Aerospace Corporation, 66 pages, 8 April 1992. (U.S. Government only).

2. Book, S.A. and E.L. Burgess, "Validation Report on CRYSTAL BALL Risk Modeling Software," The Aerospace Corporation, 74 pages, 5 January 1993. (U.S. Government only).

3. Book, S.A, Chunduri, N.R., and P.H. Young, "Validation Report on RI$K Risk Modeling Software," The Aerospace Corporation, 58 pages, 19 March 1993. (U.S. Government only).

4. Book, S.A, Chunduri, N.R., and P.H. Young, "Validation Report on @RISK Risk Modeling Software," The Aerospace Corporation, 78 pages, 6 April 1993. (U.S. Government only).

5. Book, S.A, Blackshire, O.F., and P.H. Young, "Validation Report on RISK+ Risk Modeling Software for Microsoft Project 4.0," The Aerospace Corporation, 141 pages, 6 October 1995. (U.S. Government only).

Category: II.D

Keywords: Government, Estimating, Analysis, Budgeting, Life Cycle, Acquisition Strategy, Schedule, Risk/Uncertainty, Mathematical Model, Computer Model

Title:	Small-Satellite Cost Engineering Model
Summary:	Integration of physical, engineering, and cost relationships, encompassing new generation of low-weight, single-purpose, short-lifetime tactical satellites. Goal is to allow analyst to investigate in real time cost impacts of performance changes.
Classification:	Unclassified, Government-only, Contractor-Proprietary Data
Sponsor:	NASA Jet Propulsion Laboratory
Performer:	The Aerospace Corporation P.O. Box 92957, MS: M4/939 Los Angeles, CA 90009-2957

D. A. Bearden	(310) 336-5852
G. W. Law	(310) 336-2454
J. A. Aguilar	(310) 336-2179

Resources:	Dollars: $160,000 Staff-years: 1.0
Schedule:	Start: January 1994 End: None. (Maintenance ongoing)
Data Base:	Recent historical costs and technical parameters of new generation of small satellites and launch vehicles.
Publications:	1. Bearden, D.A., Burgess, E.L., and N.Y. Lao, "Small-Satellite Cost Study," The Aerospace Corporation, publicly releasable briefing containing no proprietary information.
	2. Bell, K.D., Dawdy, A.B., and L.A. Hsu, "Cost-Effective Concept Definition Using an Integrated Cost Engineering Model Process," The Aerospace Corporation.
Category:	I.B, II.A.2, II.D
Keywords:	Government, Estimating, Space Systems, Production, Engineering, Manufacturing, Data Collection, Statistics/Regression, Data Base, Computer Model, CER

Title: Small-Satellite Cost Study

Summary: Data gathering and CER development, encompassing new generation of low-weight, single-purpose, short-lifetime tactical satellites. Implemented in test-and-evaluation version of computer model.

Classification: Unclassified; Government-only, Contractor-Proprietary Data

Sponsor: NASA Lewis Research Center

Performer: The Aerospace Corporation
P.O. Box 92957, MS: M4/021
Los Angeles, CA 90009-2957

D. A. Bearden   (310) 336-5852
N. Y. Lao   (310) 336-7876

Resources: Dollars: $60,000

Staff-years: 0.3

Schedule: Start: January 1991

End: None. (Maintenance and upgrades ongoing)

Data Base: Recent historical costs and technical parameters of new generation of small satellites and launch vehicles.

Publications: "Small-Satellite Cost Study," publicly releasable briefing containing no proprietary information.

Category: I.B, II.A.1, II.B, II.D

Keywords: Government, Estimating, Space Systems, Production, Engineering, Manufacturing, Data Collection, Statistics/Regression, Data Base, Computer Model, CER

Title:	Costs and Benefits of Adherence to MIL-SPECs and MIL-STDs
Summary:	Contractor requirements to adhere to MIL-SPECs and MIL-STDs increase program costs. The question that has to be answered is, "Do these requirements lead to improved reliability that eventually pays off?"
Classification:	Unclassified, some Contractor-Proprietary Data
Sponsor:	AF Space and Missile Systems Center, The Aerospace Corporation's Research Program
Performer:	The Aerospace Corporation P.O. Box 92957, MS: M4/021 Los Angeles, CA 90009-2957

	R. H. Lucas	(310) 336-7786
	S. E. Jones	(310) 336-8576

Resources:	Dollars: FY96: $80,000
	Staff-years: FY96: 0.5
Schedule:	Start: October 1994
	End: September 1995
Data Base:	Testing costs, other related data.
Publications:	None as yet.
Category:	I.A
Keywords:	Government, Policy, Life-Cycle, Acquisition, Strategy, Risk/ Uncertainty, Data Collection, Case Study, Study

Title: Ground Systems Cost Model

Summary: Model costs of ground systems hardware, software, operations, and maintenance. Derive CERs from historical data when available. Include satellite control, communication, launch processing, and security.

Classification: Unclassified, some Contractor-Proprietary Data

Sponsor: AF Space and Missile Systems Center

Performer: The Aerospace Corporation
P.O. Box 92957, MS: M4/021
Los Angeles, CA 90009-2957

L. B. Sidor   (310) 336-1571
N. Y. Lao   (310) 336-7876

Resources: Dollars: FY96: $100,000

Staff-years: FY96: 0.6

Schedule: Start: October 1995

End: September 1996

Data Base: Cost and technical data

Publications: Matthews, A.J., "A Ground Cost Model (G-COST) for Military Systems," AIAA, 28 February 1996.

Category: II.A, II.C, II.D

Keywords: Government, Estimating, Budgeting, Facilities, Manpower/ Personnel, Life Cycle, Data Collection, Statistics/Regression, Computer Model

Title: Impact of Programmatics on System Costs

Summary: Programmatic costs are rarely considered in the early stages of a project. Reasons for overlooking these factors include a perception that theses are non-technical issues, lack of in-depth understanding of manufacturing processes, and limited availability of data (e.g., parametric models are based on "average" programmatic conditions). Previous studies show that programmatic factors such as acquisition strategy, production rates, and funding approaches have an impact upwards of 20% on unit costs. Cost guidelines and theory for modeling the impact of programmatic factors on life-cycle costs would augment current systems definition and cost estimating practices. An understanding of the linkage (relationship) of program cost to programmatic factors would allow these parameters to be traded and evaluated in the same manner as technical parameters.

Classification: Unclassified; U.S. Government agencies and their contractors only

Sponsor: AF Space and Missile Systems Center

Performer: The Aerospace Corporation
P.O. Box 92957, MS: M4/044
Los Angeles, CA 90009-2957

C. D. Billingsley   (310) 336-1589

Resources: Dollars: $30,000

Staff-years: 0.2

Schedule: Start: FY 96

End:

Data Base: None

Publications: King, N.E., "ALARM CEM Module Upgrades Manufacturing and Programmatics—Task Definition," The Aerospace Corporation briefing, December 1994

Category: I.A, I.B, II.C

Keywords: Government, Estimating, Space Systems, Concept Development, EMD, Acquisition Strategy, Production Rate, Cost/Production Function, Method

Title: Lessons Learned Handbook for Collecting Space Systems Acquisition Expertise

Summary: Captures lessons learned about space engineering that are presently embodied in military specifications, standards, and Air Force Space and Missile Systems Center Commander's Policies. Emphasis on space technology lessons, events that motivated creation of standards, and ways of preventing future mission loss. Intended to identify critical parts of space-related standards that may be canceled or removed from contracts and provide alternative risk-mitigation measures.

Classification: Unclassified

Sponsor: The Aerospace Corporation's Research Program

Performer: The Aerospace Corporation
P.O. Box 92957, MS: M4/021
Los Angeles, CA 90009-2957

R. T. Hall	(310) 336-6822
R. H. Lucas	(310) 336-7786

Resources: Dollars: $40,000

Staff-years: 0.25

Schedule: Start: October 1995

End: September 1996

Data Base: None.

Publications: None as yet. Handbook for internal distribution intended

Category: I.A

Keywords: Government, Advanced Technology, Risk/Uncertainty, Study

Title:	Acquisition Reform Initiative System Architecture and Processes

Summary: Effort will focus on defining the elements of a modified acquisition system that takes into account the changing (and changeable) nature of the space acquisition environment. Will attempt to identify the "best" acquisition processes used by large corporations when they undertake major development projects. In support of this definition, the existing space acquisition system, its elements, their functions and interfaces will be analyzed so that more flexible replacement elements can be determined, in particular replacements for the multi-faceted functions of MIL SPECs and Standards. Acquisition practices of other industries will be evaluated and incorporated into this new acquisition architecture as appropriate.

Classification: Unclassified.

Sponsor: The Aerospace Corporation's Research Program.

Performer: The Aerospace Corporation
P.O. Box 92957, MS: M4/021
Los Angeles, CA 90009-2957

R. F. Gleiter	(310) 336-5573
S. E. Jones	(310) 336-8576
R. H. Lucas	(310) 336-7786

Resources: Dollars: FY96: $180,000

Staff-years:

Schedule: Start: October 1995

End: September 1996

Data Base: None.

Publications: None as yet

Category: I.A

Keywords: Industry, Policy, Acquisition Strategy, Study

AIR FORCE INSTITUTE OF TECHNOLOGY

Name	Graduate School of Logistics and Acquisition Management Air Force Institute of Technology
Address	AFIT/LAS 2950 P Street, Building 641 Wright-Patterson AFB, OH 45433-7765
Director	Dr. Roland D. Kankey (513) 255-7777, ext. 3382
Size	Professional: 40 Support: 4 Consultants: 0 Subcontractors: 0
Focus	The School's research focus is on logistics and acquisition issues, to include cost analysis, cost management, contracting, and acquisition management. Items reported here are a combination of faculty research and student thesis projects which are directed by AFIT faculty and worked as an integral part of the academic program leading to Master of Science degrees.
Activity	Number of projects in process: 5-10 Average duration of a project: 15 months Average number of staff members assigned to a project: 1 Average number of staff-years expended per project: Percentage of effort conducted by consultants: 0% Percentage of effort conducted by subcontractors: 0%

Title: The Effect of Technical Scope Changes on Defense Contract Cost Growth (in process)

Summary: This study tests a hypothesized causal relationship between technical scope changes to a defense contract and cost growth. Managers and analysts should be able to use this information to evaluate the consequences of introducing technical change into defense projects.

Classification: None

Sponsor: OUSD(A)

Performer: Air Force Institute of Technology

James Gordon advised by Dr. David Christensen
(513) 255-7777, ext 3375

Resources None

Schedule: Start: June 1995

End: August 1996

Data Base: DAES database from OUSD(A), and CPR data archived at ASC.

Publications: Thesis available from Defense Technical Information Center in 1996.

Category: I.C

Keywords: Government, Estimating, Weapon Systems, Life Cycle, Study, CPR/CCDR, Statistics/Regression

Title: The Distributional Properties of Cost Variances on Defense Contracts (in process)

Summary: This study tests whether cost variances reported on defense contracts are normally distributed. The results will be useful for variance investigation models and risk models that a require knowledge of the cost variance's distribution.

Classification: None

Sponsor: OUSD(A)

Performer: Air Force Institute of Technology

Robert Conley advised by Dr. David Christensen

(513) 255-7777, ext 3375

Resources   None

Schedule: Start: June 1995

End: August 1996

Data Base: DAES database from OUSD(A), and CPR data archived at ASC.

Publications: Thesis available from Defense Technical Information Center in 1996.

Category: I.C

Keywords: Government, Estimating, Weapon Systems, Life Cycle, Study, CPR/CCDR, Statistics/Regression

Title: An Analysis of Self-care at WPAFB Hospital (updated from 1995 IDA report)

Summary:: Self-care education has been shown to reduce unnecessary use of civilian health care services. This study showed that self-care education can reduce the use of unnecessary outpatient visits at a military hospital.

Classification: None

Sponsor: HQ AFMC/SG and WPMC/SG (Wright-Patterson AFB)

Performer Air Force Institute of Technology

Chris Svehlak advised by Dr. David Christensen
(513) 255-7777, ext 3375

Resources $65,000

Schedule: Start: June 1994

End: August 1995

Data Base: Consolidated Health Care System at WPMC/SG

Publications: Thesis available from Defense Technical Information Center.

Category:

Keywords: Government, Analysis, Manpower/Personnel, Study, Operations and Support, Training, Data Collection

Title: An Analysis of the Purpose and Development of Management Reserve Budget (updated from 1995 IDA report)

Summary::   This study documented the purposes and development of Management Reserve Budget by a review of system descriptions prepared by C/SCSC-compliant defense contractors and by interview of government and contractor experts.

Classification: None

Sponsor: OUSD(A) API/PM, 23020 Defense Pentagon, Room 3E1025, Washington, DC 20301-3020

Performer   Air Force Institute of Technology

Kevin Gould advised by Dr. David Christensen

(513) 255-7777, ext 3375

Resources   None

Schedule: Start: June 1994

End: August 1995

Data Base: System Descriptions

Publications: Thesis available from Defense Technical Information Center.

Category: I.D

Keywords: Government, Estimating, Weapon Systems, EMD, Manufacturing, Data Collection, Study

Title: A Comparison of Nonlinear Estimate At Completion Methods (updated form 1995 IDA report)

Summary:: This study compared the accuracy of selected nonlinear formulas for estimating the final cost of a defense contract. Results showed that popular index-based formulas were more accurate than nonlinear formulas using Rayleigh and Beta distributions.

Classification: None

Sponsor: OUSD(A) API/PM
23020 Defense Pentagon, Room 3E1025
Washington, DC 20301-3020

Performer Air Force Institute of Technology

Todd Nystrom advised by Dr. David Christensen
(513) 255-7777, ext 3375

Resources None

Schedule: Start: June 1994

End: August 1995

Data Base: Defense Acquisition Executive Summary Database

Publications: Thesis available from Defense Technical Information Center.

Category: I.B

Keywords: Government, Estimating, Weapon Systems, EMD, Manufacturing, Data Collection, Study

Title:	An Analysis of Smart Bomb Alternatives Using the Analytic Hierarchy Process (updated from 1995 IDA report)

Summary: This study is an economic analysis of smart bomb interface options on fighter aircraft. Quantitative and qualitative evaluation criteria were considered using a multi-criteria decision model, the Analytic Hierarchy Process.

Classification:	None
Sponsor:	SAF/APQW
Performer	Air Force Institute of Technology

David King advised by Dr. David Christensen

(513) 255-7777, ext 3375

Resources	None
Schedule:	Start: June 1994
	End: August 1995
Data Base:	Expert opinion
Publications:	Thesis available from Defense Technical Information Center.
Category:	I.B.1
Keywords:	Government, Analysis, Airframe, Concept Development, Acquisition Strategy, Economic Analysis, Computer Model

Title: Hazardous Materials Life Cycle Estimation

Summary: This study explored ways to more effectively use an established model for estimating the cost of hazardous waste, the HAZMAT model, developed by The Analytic Sciences Corporation. The focus of the study was to develop parametrics that would allow the model to be used earlier in a project's design process. Results showed that the modified model was nearly as accurate as the original model, required less input data, and could be used much earlier. (Updated from 1995 IDA report)

Classification: None

Sponsor:

Performer   Air Force Institute of Technology

Mark Garner and Jennifer Kirchhoffer advised by
Dr. David Christensen   (513) 255-7777, ext 3375

Resources   None

Schedule: Start: June 1994

End: August 1995

Data Base: HAZMAT database

Publications: Thesis available from Defense Technical Information Center.

Category: I.C

Keywords: Government, Estimating, Weapon Systems, Life Cycle, Environment, Computer Model

Title: Calibration of Five Software Cost Models to an Air Force Data Base ("Pentateuch Project")

Summary: Five popular software cost estimation models (PRICE-S, REVIC, SASET, SEER-SEM, and SLIM) were calibrated to a large Air Force software database managed by the Air Force's Space and Missiles Center (SMC). This project involved effort calibration of these five models to various subsets of the SMC database such as missile programs, unmanned space programs, and military mobile programs. When sufficient data was available for a subset, the models were validated with data not used in calibration. Otherwise, the models were calibrated to the entire subset of data. *Note: This is an update of the 1995 IDA Catalog entry on Page B-328*

Classification: Unclassified

Sponsor: SMC/FMC   Gina Novak-Ley

MCR, Inc.   Sherry Stukes

Performer Five AFIT Thesis Students:

Captain James Golansky (PRICE-S Calibration)
Captain Robert Kressin (SLIM Calibration)
Captain Kolin Rathmann (SEER-SEM Calibration)
Captain Carl D. Vegas (SASET Calibration)
Mrs. Betty Weber (REVIC Calibration)

Advisor: Professor Daniel V. Ferens (AFIT/LAS)
                                        (513) 255-7777, x3379
Reader: Professor David S. Christensen (AFIT/LAS)

Resources Dollars: $180,000

Staff-years: 1.25

Schedule: Start: September 1994

End: August 1995

Data Base: Version 1.0 of the SMC Software Database (SWDB) of more than 2400 programs

Publications: Five AFIT Theses available from NTIS or DTIC, all published in September, 1995:

1. Galonsky, James C., <u>Calibration of the PRICE-S Software Model</u> (AFIT Thesis GCA/LAS/95S-1), Dayton, OH, Air Force Institute of Technology: 1995.

2. Kressin, Robert K., <u>Calibration of SLIM to the Air Force Space and Missile Systems Center Software Database</u> (AFIT Thesis GCA/LAS/95S-6), Dayton, OH, Air Force Institute of Technology: 1995.

3. Rathmann, Kolin D., <u>Calibration and Evaluation of SEER-SEM for the Air Force Space and Missile Systems Center</u> (AFIT Thesis GCA/LAS/95S-9), Dayton, OH, Air Force Institute of Technology: 1995.

4. Vegas, Carl D., <u>Calibration of the Software Architecture Sizing and Estimation Tool</u> (AFIT Thesis GCA/LAS/95S-11), Dayton, OH, Air Force Institute of Technology: 1995.

5. Weber, Betty G., <u>A Calibration of the REVIC Software Cost Estimating Model</u> (AFIT Thesis GCA/LAS/95S-13), Dayton, OH, Air Force Institute of Technology: 1995.

Category: II.A.1, II.A.2, II.D

Keywords: Government, Analysis, Estimating, EMD, Life Cycle, Labor, Data Collection, Statistics/Regression, Study

Title:	Calibration of Seven Software Cost Models to an Air Force Data Base ("Septuagint Project")

Summary: Two additional models to the five software cost estimation models calibrated in the 1995 "Pentateuch" study (PRICE-S, REVIC, SASET, SEER-SEM, and SLIM) are being calibrated to a large Air Force software database managed by the Air Force's Space and Missiles Center (SMC). These models are CheckPoint and SoftCost-OO. This project involves effort calibration of these five models to various subsets of the SMC database such as missile programs, unmanned space programs, and military mobile programs. The models will be validated with data not used in calibration. *Note: This is a follow-on to the Pentateuch study discussed elsewhere in this catalog.*

Classification: Unclassified .

Sponsor: SMC/FMC   Shirley Tinkler

MCR, Inc.   Sherry Stukes

Performer Two AFIT Thesis Students:

         Captain Karen Mertes (CheckPoint Calibration)
         Captain Steve Southwell (SoftCost-OO Calibration)

Advisor: Professor Daniel V. Ferens (AFIT/LAS)
                                 (513) 255-7777, x3379
Reader: Professor David S. Christensen (AFIT/LAS)

Resources (Based on assessment from SMC of 1995 Pentateuch project)

Dollars: $72,000

Staff-years: 0.50

Schedule: Start: September 1995

End: August 1996

Data Base: Version 2.1 of the SMC Software Database (SWDB) of more than 2400 programs

Publications: Two AFIT Theses which will available from NTIS or DTIC in 1997

Category: II.A.1, II.A.2, II.D

Title: A Cost Estimating Model for Retirement of the Minuteman III Intercontinental Ballistic Missile Weapon System

Summary: This study focuses on developing a cost estimating model for the total cost of the planned deactivation of Minuteman ICBMs at Grand Forks, North Dakota. The cost model structure and results provide functional parallels for future weapons system deactivations.

Classification: Unclassified

Sponsor: Air Force Space Command (AFSPC/XPP), Peterson AFB, CO

Performer Air Force Institute of Technology

Joel Hanson advised by Dr. Wendell Simpson and
Dr. Roland Kankey   (513) 255-7777, x3382

Resources N/A

Schedule: Start: June 1994

End: August 1995

Data Base: N/A

Publications: Distribution only as directed by HQ AFSPC/XPP

Category: II.A.2

Keywords: Government, Estimating, Missiles, Computer Model, Retirement and Demilitarization

DEFENSE SYSTEMS MANAGEMENT COLLEGE

Name	Financial Management Department
Address	Defense Systems Management College Fort Belvoir, VA 22060
Director	Mr. J. G. Land (703) 805-3755 Lt. Col. Ronald Phillips (703) 805-4431 Mr. Bernard Rudwick (703) 805-5254
Size	Professional: 11 Support: 2 Consultants: 0 Subcontractors: 0
Focus	Cost Analysis, Budget Process, Funds Management
Activity	Number of projects in process: 12 Average duration of a project: 3 Months Average number of staff members assigned to a project: 1-2 Average number of staff-years expended per project: 0.1 Percentage of effort conducted by consultants: 0% Percentage of effort conducted by subcontractors: 0%

Title:	Research on Ongoing Acquisition Research (ROAR)

Summary: ROAR is an on-line and World-Wide Web system available to DoD and university researchers who currently conduct studies on acquisition—related topics such as cost modeling and pricing concerns, engineering and manufacturing practices, industrial base issues, logistics, contracting, commercial practices, acquisition workforce management, and education, etc. Access is available via the ROAR BBS (703-805-2865) and voice (703-271-5988) for those who contribute of their own ongoing study. Also, ROAR data became accessible via the Internet in the 2nd half of CY 1995. The URL for ROAR is: http://www.dsmc.dsm.mil/roar.html. ROAR tracks over 2,500 studies around the world.

Classification: Unclassified

Sponsor: Defense Systems Management College and Defense Acquisition University
Fort Belvoir, VA 22060

Mr. James Abellera   (703) 805-2525

Performer: DSMC Faculty

Resources: Dollars:

Staff-years:

Schedule: Start: 1989

End: Continuing

Data Base: See summary above

Automation: Multiple PCs

Publications: New search results are available electronically every week via the ROAR BBS for registered subscribers until their projects are completed

Category: I.A.1

Keywords: Industry, Government, Data Collection, Data Base

Title: Cost and Risk Analysis Research

Summary: The objective of this applied research effort is two-fold. The first part seeks to develop a more effective strategy for analyzing, managing, and controlling risk (particularly cost overruns) within developmental contracts. This research centers on applying an integrated approach to program management- an approach which coordinates the four key elements of technical performance measurement, cost control, schedule control, and risk management. This method helps maintain active channels of communication between contractor and client, and assists in the overall management of the program. Past effort in this area has focused on the Airborne Low-Frequency Sonar Program of the SH-60F Seahawk helicopter as a pilot vehicle for validating the risk management process. Current efforts involve relating Cost as the Independent Variable (CAIV) to the process of Risk Management in an era of budget decline and downsizing in DoD and its contractors.

The second related part of this research effort has focused on developing methods for reducing the cost of development or production programs where affordability has been a major constraint. An example of this process was the effort in support of the recent C-17 Should Cost Study conducted by the USAF Material Command, which resulted in a large cost reduction in future production costs.

Classification: Unclassified

Sponsor: Defense Systems Management College
Fort Belvoir, VA 22060

Performer: Defense Systems Management College
Fort Belvoir, VA 22060

Mr. Bernard Rudwick   (703) 805-5254

Resources: Dollars:

Staff-years:

Schedule: Start: 1995

End: Continuing

Data Base:

Publications: Internal memoranda only are available at the present time. These are in the process of being converted into an updated edition of the DSMC Guide on Risk Management.

Category: II.B

Keywords: Industry, Government, Estimating, Analysis, Reviewing/Monitoring, Helicopters, EMD, Risk/Uncertainty, Case Study, Economic Analysis, Expert System, Study

Title: Cost Analysis Strategy Assessment (CASA) Model Requirements Analysis

Summary: Model was developed in mid 1980's based on a survey of DoD program managers Life Cycle Cost Analysis requirements. The objective of this research is to update the model Requirement Listing. This will serve as the basis of model update efforts. Customers will rank a list of potential model changes such as: windows' user interface, flexible maintenance concepts, operational readiness target as a variable, graphical output reports, etc. Customers will add model change recommendations to the List. This will lead to update of the functionality of the existing DSMC CASA Model based on the new policy direction (increased emphasis on Cost as an Independent Variable and Life Cycle Cost).

The CASA model is basically a management decision aid based on life cycle cost. Currently, RDT&E and Production costs are "throughput" cost. Operating and Support (O&S) costs are developed using an "engineering bottom-up" approach. The model requires the user to input a number of costs and variables associated with O&S costs to build a data file. The input screen will prompt the user for information, and if not provided, the model will assume zero. The CASA model calculates and provides O&S costs over the 20-30 years of operating the system. The model will perform sensitivity analysis, generate a risk analysis and compare several life cycle cost output files. The CASA model employs approximately 90 algorithms with 190 variables.

Classification: Unclassified

Sponsor: Defense Systems Management College
Fort Belvoir, VA 22060

Performer: Defense Systems Management College
Fort Belvoir, VA 22060

Mr. Joel Mamary (703) 805-4653

Resources: Dollars: FY 96: $20,000

Staff-years:

Schedule: Start: May 1996

End: December 1996

MINISTRY OF DEFENCE,
DIRECTORATE OF PROJECT TIME AND COST ANALYSIS

Title: Software Support Cost Model Project (SSCMP)

Summary: The overall aim of the SSCMP is to develop a software package to enable procurers, managers and designers to estimate the costs of support for software, over its in-service life. There have been three stages in the program to date, which started in 1991 with a theoretical Feasibility Study. This will be followed by a Software Questionnaire Study and a Pilot Study, which was completed in April 1995. The Pilot Study has suggested that the key factors that influence software support cost are not necessarily size, complexity or ages, which are usually identified by current thinking. The current work is a Main Study phase which has the following objects: to define the factors and effects that have an impact on software support costs and to develop a concept model of software support based on a study of MoD and commercial software support teams. It is anticipated that there will be three further phases to the SSCMP. These will be the production of the software package, an implementation phase and a support phase.

Classification: Unclassified

Sponsor: Directorate of Cost Forecasting—Mod UK

Performer: BMT—Reliability Consultants Ltd.
Fareham, UK

Resources: Dollars: $400,000

Staff-years:

Schedule: Start: December 1995

End: September 1998

Data Base: Using Microsoft Excel to store and manipulate collected data.

Publications: Reports on specific activities, throughout the program.

Category: II.C

Keywords: Government, Industry, Software, Operations and Support, Data Collection, Mathematical Modeling, Metrics

Title: Forecasting and Managing "Bow Waves" in Defence Equipment Expenditure

Summary: There is a well established pattern in the UK defence equipment program that, in the period immediately beyond the Public Expenditure Survey (3 years), forecast expenditure is significantly high than forecasting funding. This is know as the "Bow Wave" effect. Currently, using a combination of program realignment, slippage and refinement of equipment requirements, the "Bow Wave" is eroded. There is, however, a growing body of opinion that the changing nature of defence procurement is reducing the flexibility of program managers to contain the "Bow Wave" in future years. Their concern is based on the following observations: equipment unit costs are rising in real terms, which could cause the "Bow Wave" to grow; there are fewer equipment projects taking a larger proportion of the procurement budget, giving the programmers fewer projects to realign; the policy of contracting to firm price and program milestones, thereby committing the equipment program further into the future. In addition, it is proving difficult for operational analysts to assess future force level capability without a realistic equipment program to use as a reference. The UK MoD(PE) has initiated a study to investigate the substance behind the current concerns; to recommend options for changes in program management practice and to propose improvements in equipment program and expenditure forecasting.

Classification: Unclassified

Sponsor: Directorate of Cost Forecasting—MoD UK

Mr. Eric Lomas   44-171-305-0534

Performer: CORDA, Chippenham, UK

Resources: Dollars: $10,000

Staff-years:

Schedule: Start: May 1996

End: June 1996

Data Base:

Publications: TBD

CENTER FOR NAVAL ANALYSIS

Title: Study of Procedures and Software for Assessment in Cost Estimates

Summary: This is a study of selected analytical procedures and software packages associated with cost uncertainty analysis. The analytical questions have to do with (1) treatment of correlation among cost elements, (2) selection of specific probability distributions for characterizing uncertainty in different circumstances, and (3) generation of parameter values for the distributions. A set of software packages that support risk/uncertainty analysis is being evaluated, including one developed by the sponsor of the work. (This project was included in last year's report.)

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis

Robert E. Lee   (703) 604-0302

Performer: The CNA Corporation

Dr. Henry Eskew   (703) 824-2254
Dr. Walter Nunn   (703) 824-2456

Resources: Dollars: Core Contract

Staff-years: 0.3

Schedule: Start: September 1994

End: June 1995

Data Base: N/A

Publications: *Procedures and Software for Assessing Uncertainty in Cost Estimates,* CNA Research Memorandum 95-87, Henry L. Eskew and Walter R. Nunn, June 1995, Unclassified

Category: II.A.2, II.B

Keywords: Government, Estimating, Analysis, Risk/Uncertainty, Statistics/Regression, Study

Title:	Update and Extension of Automated Cost Models

Summary: This project involves updating and expanding two automated cost models: one that estimates acquisition costs of tactical aircraft, and another that projects long-term fiscal requirements of the Department of the Navy. For the aircraft model, the major intent is to add the capability to estimate annual operations and support (O&S) costs. For the fiscal requirements model, the plan is to convert the present mainframe-based model to an electronic spreadsheet for use on a personal computer, and to also use current program and budget data for updating the model's tables and algorithms. (This project was included in last year's report.)

Classification: Unclassified

Sponsor: CNA Initiated Study

Navy POC: Director, Assessment Division (N-81)

Performer: The CNA Corporation

Mr. Jino Choi	(703) 824-2266
Dr. Henry Eskew	(703) 824-2254

Resources: Dollars: Core Contract

Staff-years: FY 95: 0.2 FY 96: 0.5

Schedule: Start: May 1995

End: September 1996

Data Base: N/A

Publications: 1. *Some New Estimates of the Navy's Indirect Manning Costs*, CNA Research Memorandum 95-203, Henry L. Eskew, December 1995, Unclassified

2. *Revised Projection Algorithms for the Fiscal Requirements Model*, CNA Information Memorandum 447, Henry L. Eskew, December 1995, Unclassified

3. *User's Guide to the Fiscal Requirements Model—PC/Mac Version*, CNA Information Memorandum 434, Barbara J. Lingberg, January 1996, Unclassified

Category: II.A.1, II.A.2, II.B

MITRE CORPORATION

Name	The Economic and Decision Analysis Center (EDAC)
Address	The MITRE Corporation 1820 Dolley Madison Boulevard McLean, VA 22102
Director	Dr. William Hutzler (703) 883-6911
Size	Professional: 85 Support: 10 Consultants: 0 Subcontractors: 0
Focus	Applied economic analysis, cost analysis, decision support, acquisition analysis, nondevelopmental item acquisition, program management, risk management and analysis, life cycle management, logistics engineering, business process reengineering, business and technology case analysis, and information services and technology benchmarking.
Activity	Number of projects in process: 207 Average duration of a project: 6 months Average number of staff members assigned to a project: 2 Average number of staff-years expended per project: 2 Percentage of effort conducted by consultants: 0% Percentage of effort conducted by subcontractors: 0%

Title: MITRE's Software Cost Database

Summary: Details of software developments are being collected for calibrating software cost and schedule models. A previously existing database (based on development through 1992) provides the data elements. The data will be used to generate productivity-based estimates and to calibrate line-of-code base estimating models such as COCOMO and REVIC.

Classification: Unclassified

Sponsor: The Economic and Decision Analysis Center

Performer: MITRE

Resources: Dollars: $40,000

Staff-years:

Schedule: Start:

End: FY 96

Data Base: MITRE's Software Development Cost and Schedule Database

Publications: None

Category: II.A.1

Keywords: Government, Estimating, Electronics/Avionics, EMD, Life Cycle, Software, Data Collection, Statistics/Regression, CER

Title: Dynamic Software Life Cycle Model

Summary: The Dynamic Software Life Cycle Model, or Full Cycle, is a system dynamics model of the software development process. The model can be calibrated to an ongoing software development and then used to test management strategies for controlling and altering the key management metrics; completion status (measured as code completed, documentation completed, and errors fixed), number of staff (total, allocated to documentation, allocated to quality assurance), and staffing policies (overtime, rate of new hires, limitation on hiring). Programmed in Extend, its user-friendly interface looks like a pilot's cockpit and indeed may be thought of as a flight simulator for software development managers.

Classification: Unclassified

Sponsor: The MITRE Technology Program

Performer: MITRE

Resources: Dollars: $180,000

Staff-years:

Schedule: Start:

End: FY 97

Data Base: None

Publications: None

Category: II.B

Keywords: Estimating, Reviewing/Monitoring, EMD, Life Cycle, Simulation, Computer Model

LOGISTICS MANAGEMENT INSTITUTE

Name	Logistics Management Institute
Address	2000 Corporate Ridge McLean, VA 22102-7805
Director	Mr. Ed Simms (703) 917-7221
Size	Professional: 4 Support: 1 Consultants: 1 Subcontractors: 0
Focus	Weapon System Costs, Ownership Costs, Infrastructure Costs
Activity	Number of projects in process: 6 Average duration of a project: 1 year Average number of staff members assigned to a project: 2-3 Average number of staff-years expended per project: 2 Percentage of effort conducted by consultants: 10% Percentage of effort conducted by subcontractors: 0%

Title: Empirical Analysis of Learning Curves

Summary: Reductions in scale of the Defense budget, advances manufacturing technologies, and acquisition reform will all affect the costs of future acquisitions. The sensitivity of cost estimates to underlying assumptions becomes of greater importance during this period of transition. This task is examining these issues from an empirical perspective and is building analytical tools to assist analysts in the CAIG in preparing their independent estimates.

Classification: Unclassified

Sponsor: Weapon System Cost Analysis Division
OD (PA&E)
Room 2C310, The Pentagon
Washington, DC 20301

Major David Nicholls   (703) 695-7282

Performer: LMI

Walt Cooper   (703) 917-7242
Eric Gentsch   (703) 917-7226
Joe Domin   (703) 412-5225

Resources: Dollars: .

Staff-years: 1.8

Schedule: Start: April 1999

End: March 1997

Data Base: No new data bases are being created in this project.

Publications: A final report will be published at the conclusion of the analysis.

Category: I.A, II.A.2, II.C, II.D

Keywords: Industry, Estimating, Missiles, Production, Manufacturing, Acquisition Strategy, Data Collection, Cost/Production Function, Statistics/Regression, Study

Title:	Analysis of Institutional Training Resources	

Summary: Institutional training is a $14 billion-a-year program in the Department of Defense. This task develops tools to assist senior analysts exercise their staff oversight responsibilities. The research focuses on the relationship between resources (fiscal, manpower and physical) and levels of training activity.

Classification: Unclassified

Sponsor: Readiness and Training Directorate
Office, Deputy Under Secretary of Defense (Readiness)
The Pentagon
Washington, DC 20301

Bob Howlett   (703) 695-6857
Mike Kendall   (703) 697-4992

Performer: LMI

Walt Cooper   (703) 917-7242
Matt Fuller   (703) 917-7447
Bill Esmann   (703) 917-7563

Resources: Dollars:

Staff-years: 3.6

Schedule: Start: July 1992

End: September 1996

Data Base: No new data bases are being developed. Tools being constructed use several existing data bases, including training load and workload files furnished by the Defense Manpower Data Center, the FYDP, and other data bases containing information on end strengths.

Publications: Technical notes and users' guides

Category: II.A

Keywords: Government, Estimating, Analysis, Programming, Budgeting, Forces, Infrastructure, Manpower/Personnel, Operations and Support, Fixed Costs, Variable Costs, Training, Data Collection, Mathematical Modeling, Statistics/Regression, Computer Model

Title:	Returns on Individual Training Investment
Summary:	This study is exploring the relationship among training investments, current and proposed training policies, and expected continued length of satisfactory service.
Classification:	Unclassified
Sponsor:	Office, Deputy Under Secretary of Defense (Requirements and Resources The Pentagon Washington, DC 20301
	John Enns (703) 697-0617
Performer:	LMI
	Matt Fuller (703) 917-7447
Resources:	Dollars: Staff-years: 0.8
Schedule:	Start: January 1996 End: October 1997
Data Base:	No new data are being developed.
Publications:	Technical notes
Category:	II.A
Keywords:	Government, Estimating, Analysis, Programming, Budgeting, Forces, Infrastructure, Manpower/Personnel, Operations and Support, Fixed Costs, Variable Costs, Training, Data Collection, Mathematical Modeling, Statistics/Regression, Computer Model

Title: Improving DBOF Pricing

Summary: This study is providing a better understanding of the impact of various pricing problems on the resource requirements for infrastructure activities. The project will select a sample of depot-level repairables for each Military Service that have experienced the largest base-level repair elasticities with DBOF prices, analyze those items to determine the number and dollar value of uneconomic repair decisions, and extrapolate the sample results from each Service to the entire set of DLRs.

Classification: Unclassified

Sponsor: Director, Force and Infrastructure Cost Analysis Division
OD (PA&E)
Room 2D278, The Pentagon
Washington, DC 20301

Dr. Craig College

Performer: LMI

John Wallace   (703) 917-7239

Resources: Dollars:

Staff-years: 1.8

Schedule: Start: February 1996

End: February 1997

Data Base: A DLR data base

Publications: A final report will be published upon completion of the analysis

Category: II.A

Keywords: Government, Estimating, Analysis, Programming, Budgeting, Forces, Infrastructure, Operations and Support, Fixed Costs, Variable Costs, Data Collection, Mathematical Modeling, Statistics/Regression

INSTITUTE FOR DEFENSE ANALYSES

Name	Cost Analysis and Research Division Institute for Defense Analyses
Address	1801 N. Beauregard Street Alexandria, VA 22311
Director	Dr. Stephen J. Balut (703) 845-2527
Size	Professional: 42 Support: 4 Consultants: 36 Subcontractors: 1
Focus	Systems Costs, Force Costs, Operations Costs
Activity	Number of projects in process: 40 Average duration of a project: 1 year Average number of staff members assigned to a project: 2-4 Average number of staff-years expended per project: 2.0 Percentage of effort conducted by consultants: 30% Percentage of effort conducted by subcontractors: 2%

Title: Defense Programming Database

Summary: This task is to analyze and document the databases currently used to provide senior management and their staffs with the information necessary to make informed program decisions, and to recommend improvements. The primary database used is the Future Years Defense Program (FYDP). Following this analysis, design and development of a rapid prototype Defense Programming Database will be accomplished. The design architecture will include the tools necessary for data retrieval and report writing capabilities. Products will be approved by a DoD task force prior to implementation.

Classification: Unclassified work dealing with a classified database

Sponsor: OSD(PA&E)
1800 Defense Pentagon (2D311)
Washington, DC 20301-1800

Dr. Bryan Jack   (703) 697-2936

Performer: IDA

Mr. Paul Goree   (703) 845-2238

Resources:

	Dollars:	Staff-years:
FY 95	$340,000	2.2
FY 96	$550,000	3.5

Schedule: Start: June 1995

End: May 1997

Data Base: FYDP, APPS, DPD, MDAP

Publications: TBD

Category: II.A, II.C, II.D

Keywords: Government, Programming, Forces, Infrastructure, Manpower/ Personnel, Life Cycle, Automation, Data Collection, Database

Title:	Cost of Defense Force Projections
Summary:	Develop methodologies and capability to estimate the cost of projected defense forces, acquisition programs, and major support functions out to the year 2013. Following the projection, contribute to analyses of cost implications of alternative force and acquisition strategies. [This task appeared in the 1995 catalog as IDA-4.]
Classification:	Secret
Sponsor:	OUSD(A&T)(API) Program Assessment, Acquisition Room 1E462, The Pentagon Washington, DC 20301
	Dr. Royce Kneece (703) 697-1786
Performer:	IDA
	Mr. Timothy J. Graves (703) 845-2339

Resources:

	Dollars:	Staff-years:
FY 90	125,000	1.0
FY 91	125,000	1.0
FY 92	200,000	1.3
FY 93	250,000	2.0
FY 94	300,000	2.4
FY 95	75,000	0.6

Schedule:	Start: July 1990
	End: September 1996
Data Base:	Defense Program Projection
	Description: FYDP type data for all DoD programs to include Defense Mission Categories, Program Element, Procurement Annex Line Item
	Automation: PC in dBASE, FoxPro
Publications:	"The Defense Program Projection," T. J. Graves, pending, Unclassified
Category:	II.A.1, II.A.2, II.B

Title:	Defense Program Projection (DPP) Support

Summary: The objective of this task is to develop and implement new capabilities in the DPP model, to assist PA&E personnel with installation of the latest version, and to help train users in model operations.

Classification: Secret

Sponsor: OD(PA&E)
Force Planning Division
The Pentagon, Room 2C281
Washington, DC

Mr. Joseph Nogueira   (703) 697-1786

Performer: IDA

Mr. Timothy J. Graves   (703) 845-2339

Resources:

	Dollars:	Staff-years:
FY 91	$45,475	0.4
FY 94	$120,000	1.0
FY 95	$100,000	0.8
FY 96	$250,000	2.0

Schedule: Start: July 1991

End: December 1997

Data Base: DPP

Description: FYDP type data for all DoD program to include Defense Mission Categories, Program Element, Procurement Annex Line Item

Publications: Pending, Unclassified

Category: II.A.1, II.A.2 and II.B

Keywords: Government, Programming, Forces, Acquisition Strategy, Operations and Support, Mathematical Modeling, Computer Model

Title: FYDP Tracking and Analysis System

Summary: This task strengthens the DoD's capability to apply FYDP data when conducting analyses in support of PPBS processes through the development of a system of computer-based analytical tools.

Classification: Secret

Sponsor: OD(PA&E)
Force and Infrastructure Cost Analysis Division
The Pentagon, Room 2D278

Mr. Daniel Barker   703) 697-4311

Performer: IDA

Mr. Timothy Graves   (703) 845-2339

Resources:

	Dollars:	Staff-years:
FY 93	$85,000	0.6
FY 94	$150,000	1.2

Schedule: Start: July 1993

End: December 1996

Data Base: FYDP

Description: FYDP type data for all DoD programs to include Program Element

Automation: PC in FoxPro, Visual Basic

Publications: TBD

Category: II.A.1, II.A.2 and II.B

Keywords: Government, Programming, Forces, Life Cycle, Acquisition Strategy, Mathematical Modeling, Computer Model

Title:	FYDP Related Studies

Summary: This task supports the conduct of studies to improve the existing FYDP related taxonomy of missions and infrastructure and to maintain and utilize previously developed models for FYDP-related analyses. This task was listed in *The 1995 IDA Cost Research Symposium* report under the name Data Preparation Program Conversions as project IDA-5.

Classification: Secret

Sponsor: OD(PA&E)
Force and Infrastructure Cost Analysis Division
The Pentagon, Room 2D278

Mr. Daniel Barker   703) 697-4311

Performer: IDA

Mr. Timothy J. Graves   (703) 845-2339

Resources:

	Dollars:	Staff-years:
FY 92	$40,000	0.3
FY 93	$300,000	2.4
FY 94	$130,000	1.0
FY 95	$150,000	1.2

Schedule: Start: September 1992

End: December 1997

Data Base: AMORD, FYDP

Description: FYDP type data for all DoD programs to include Defense Mission Categories, Program Element

Publications: TBD

Category: II.A.1, II.A.2 and II.B

Keywords: Government, Programming, Forces, Mathematical Modeling, Computer Model

Title: National Defense Program Costs

Summary: Develop a computer model that permits small to medium size countries to estimate the capabilities and resource requirements of alternative future force compositions. The model provides cost estimates that are sensitive to the following force characteristics: numbers and types of combat and support units, numbers and types of equipment, unit manning, peacetime training levels (OPTEMPO), equipment modernization, and WRM inventory changes. The model can be set up to use currencies, cost accounts, personnel classifications, and a wide variety of force and equipment configurations. Cost modeling provides the ability to model direct and indirect personnel costs, fixed and variable operating costs, and multi-year procurement funding. Users have convenient access to all characteristics of the model so they can adjust the model's use to their own circumstances.

Classification: Unclassified

Sponsor: OD(PA&E)
Europe and Pacific Division
Room 2C270, The Pentagon
Washington, DC 20301

Colonel Gary Morgan   (703) 697-6415

Performer: IDA

Mr. James L. Wilson   (703) 845-2469

Resources:

	Dollars:	Staff-years:
FY 93	$25,000	0.2
FY 94	$288,000	1.9
FY 95	$550,000	3.5
FY 96	$1,000,000	6.8

Schedule: Start: September 1993

End: December 1997

Data Base: None

Publications: TBD

Title: Assessing Defense Funding Supporting Readiness

Summary: Maintaining the readiness of U.S. defense forces is one of the highest budgetary priorities of the Department of Defense. In order to do this, analysts and senior defense executives must be able to evaluate defense budgets and the FYDP to determine if they provide adequate funding for the desired level of readiness. A major portion of this research is identifying and quantifying the accounting changes that have occurred in DoD funding policies over the past two decades. The research also is developing a methodology for identifying the portions of the defense program that have the most impact on readiness and is developing alternative metrics that describe changes in defense force size. [This task appeared in the 1995 catalog as IDA-3.]

Classification: Secret

Sponsor: Deputy Under Secretary of Defense (Readiness)
Director for Readiness and Training
Room 1C757, The Pentagon
Washington, DC 20301

Colonel Charles Mitchell   (703) 697-4992

Performer: IDA

Mr. James L. Wilson   (703) 845-2469

Resources:

	Dollars:	Staff-years:
FY 95	$300,000	1.9
FY 96	$400,000	2.5

Schedule: Start: Oct 1994

End: Sep 1996

Data Base: FYDP Funding Adjustments (Pending)

Publications: TBD

Category: II.B, II.C

Keywords: Government, Analysis, Forces, Life Cycle, Readiness

Title:	Analytic Support to the Commission on Roles and Missions of the Armed Forces
Summary:	This task supports the Commission in their review of the military mission definition. IDA is providing technical support on 20 of the 26 issues and cost support on all the issues. Cost support runs the gamut of simple use of existing models/data to full blown analyses requiring the development of new models involving data collection, manipulation and analysis. [This task appeared in the 1995 catalog as IDA-1.]
Classification:	Generally Unclassified with Secret annexes.
Sponsor:	The Commission on Roles and Missions of the Armed Forces Suite 1200F, 1100 Wilson Blvd. Arlington, VA
	Captain Gregory L. Shaw (703) 696-4250 ext. 35
Performer:	IDA
	Mr. Timothy J. Graves (703) 845-2339
Resources:	Dollars: $4,541,000
	Staff-years: 24
Schedule:	Start: July 1994
	End: May 1995
Data Base:	FYDP
	Description: FYDP type data for all DoD programs to include Defense Mission Categories, Program Element
	Automation: PC in FoxPro, Excel, others
Publication:	TBD
Category:	I.A, I.B
Keywords:	Government, Estimating, Forces, Weapon Systems, Infrastructure, Life Cycle, Fixed Costs, Variable Costs, Acquisition Strategy, Risk/Uncertainty, Readiness, Sustainability, Data Collection, Case Study, Cost/Production Function, Mathematical Modeling

Title: Coast Guard Models

Summary: Analyze the Coast Guard's needs for cost models to support the full spectrum of its cost-estimating needs. Survey the staff of Coast Guard headquarters and examine governing federal and Department of Transportation requirements to develop a statement of cost-modeling requirements. Develop a cost estimating framework that provides a standard Coast Guard structure. Develop a Handbook of standard Coast Guard cost-estimating relationships referencing relevant Department of Transportation and Coast Guard directives. Design, prototype, and develop a project oriented cost model that meets the Coast Guard's requirements for developing cost estimates for Planning Proposals prepared by field activities.[This task appeared in the 1995 catalog as IDA-23.]

Classification: Unclassified

Sponsor: U.S. Coast Guard Research and Development Center
1082 Shennecossett Road
Groton, CT

Mr. Clark Prichett   (203) 441-2653

Performer: IDA

Mr. James L. Wilson   (703) 845-2469

Resources:

	Dollars:	Staff-years:
FY 93	$10,000	0.1
FY 94	$75,000	0.5
FY 95	$280,000	1.8
FY 96	$100,000	0.6

Schedule: Start: July 1993

End: September 1996

Data Base: None

Publications: Pending

Category: II.C, II.D

Keywords: Government, Estimating, Life Cycle, Fixed Costs, Variable Costs, Computer Model

Title:	Program Risk Analysis and Management

Summary: The objective of this task is to develop algorithms by which contractors may develop more reasonable risk margins for bidding on production contracts. In addition, the task will investigate mechanisms by which the government may review and monitor contractor risk estimates. [This task appeared in the 1995 catalog as IDA-6.]

Classification: Unclassified

Sponsor: USD(A&T)
Acquisition Program Integration

Mr. Wayne Abba   (703) 695-5166

Performer: IDA

Dr. Matthew S. Goldberg   (703) 845-2099

Resources:

	Dollars:	Staff-years:
FY 95	$700,000	4.0
FY 96	$400,000	2.3

Schedule: Start: December 1994

End: May 1997

Data Base: N/A

Publications: Final report due at end of project.

Category: I.B.2, I.E

Keywords: Industry, Government, Estimating, Reviewing/Monitoring, Budgeting, Missiles, Production, WBS, Risk/Uncertainty, Acquisition Strategy, Mathematical Modeling, Data Base, Review, Method

Title: Technical and Schedule Risk Assessments for Tactical Aircraft Programs

Summary: This task supports Air Warfare/Strategic and Tactical Systems in providing independent program assessments of technical and schedule risks for tactical aircraft and missiles to the Conventional Systems Committee for DAB milestone reviews. This is a continuing project. [This task appeared in the 1995 catalog as IDA-8.]

Classification: Secret/Proprietary Information

Sponsor: USD(A&T)
S&TS/AW
Room 3E1081, The Pentagon
Washington, DC 20301

Mr. Gissendanner (703) 695-3015

Performer: IDA

Dr. J. R. Nelson (703) 845-2571
Mr. Bruce Harmon (703) 845-2501

Resources: Dollars: $400,000

Staff-years: 2.5

Schedule: Start: February 1992

End: Continuing

Data Base: N/A

Publications: TBD

Category: I.B.2

Keywords: Government, Analysis, Aircraft, EMD, Production, Schedule, Data Collection, Data Base, Method

Title:	Methods to Assess Schedules for the Strategic Defense System
Summary:	The objective of this task is to develop methods for assessing the acquisition schedules of ballistic missile defense systems. The systems include space-based surveillance and interceptor systems, surface-based interceptor systems and other surface-based elements. [This task appeared in the 1995 catalog as IDA-25.]
Classification:	Unclassified

Sponsor: BMDO/PDE,
The Pentagon, Room 1E1037
Washington, DC

Mr. James Dryden   (703) 412-1067

Performer: IDA

Mr. Bruce Harmon   (703) 845-2510

Resources:

	Dollars:	Staff-years:
FY 95	$50,000	0.4
FY 96	$50,000	0.4

Schedule: Start: January 1991

End: December 1996

Data Base: Description: Schedule and characteristic data on 26 unmanned spacecraft, 22 missile and 51 software programs.

Automation: None

Publications: 1. "Assessing Acquisition Schedules for Unmanned Spacecraft," IDA Paper P-2766, April 1993

2. "Schedule Assessment Methods for Surface-Launched Interceptors," IDA Paper P-3014, August 1995

Category: I.B.2, II.A.2

Keywords: Government, Schedule, Estimating, Method, Regression/Statistics, Space Systems, Missiles, EMD, Production

Title:	Integrated Schedule and Cost Model

Summary: Collect satellite and missile schedule and cost data including functional costs over time at the program level from contractor and government sources. Investigate schedule and functional cost relationships at major acquisition milestones. Develop analytical model that provides estimates of changes in costs associated with changes in schedules and vice versa for satellite and missile systems. [This task appeared in the 1995 catalog as IDA-2.]

Classification: Proprietary Information

Sponsor: BMDO
Director, Cost Estimating and Analysis
The Pentagon, Room 1E1037
Washington, DC 20301

Mr. James Dryden   (703) 693-1813

Performer: IDA .

Mr. James Bui   (703) 845-2133
Mr. Bruce Harmon   (703) 845-2501

Resources:

	Dollars:	Staff-years:
FY 96	$100,000	0.6
FY 96	$50,000	0.3

Schedule: Start: June 1994

End: June 1997

Data Base: Contractor-provided and CCDR functional cost over time data for selected space and missile systems. Program level functional RDT&E and production costs. Satellite and missile schedule information collected by IDA.

Automation: Excel Spreadsheets

Publications: TBD

Category: II.A

Title: Affordable Multi-Missile Manufacturing (AM3)

Summary: IDA will support DARPA/DoD evaluation of missile industry cost reduction initiatives to be submitted in the form of Integrated Portfolio Benefit Analyses. As part of this support, IDA will provide guidance to the industry teams related to analytical ground rules and methods. IDA will comment on the realism of the proposed savings and where appropriate, recommend adjustments. Summarized findings will be presented as a report, and will be used in the award of Phase III Factory Demonstrations.

Classification: Unclassified

Sponsor: Defense Advanced Research Projects Agency
3701 North Fairfax Drive
Arlington, VA 22203-1714

Dr. Michael F. McGrath   (703) 696-2224

Performer: IDA

Mr. Gregory C. Bell   (703) 845-2549

Resources:

	Dollars:	Staff-years:
FY 96	$200,000	1.25
FY 97	$200,000	1.25

Schedule: Start: November 1995

End: July 1997

Data Base: Updated and consolidated Missile Cost Estimating Relationships (CERS) from Tecolote, MCR, SAIC, NWC China Lake, USAF, industry, and IDA sources will be used to validate "business as usual/as is" cost levels. Industry cost savings initiates ("to be" cost environment) will be related and compared to the business as usual cost levels and affordability improvement trends will be documented.

Publications: TBD

Category: I.A, I.B, I.C, II.A.1, II.A.2

Title: Space and Missile Systems Nuclear Hardening Costs

Summary: Investigate relationships between costs and technical characteristics, including nuclear-radiation hardening and other survivability features of selected military satellite and ground-based missile systems. Develop CERs to estimate the marginal costs to harden satellites and missiles against nuclear weapons effects.[This task appeared in the 1995 catalog as IDA-7.]

Classification: Secret-Restricted Data, Proprietary Information

Sponsor: DNA/ESE
6801 Telegraph Road
Alexandria, VA

Major Corey Langenwalter   (703) 325-1145

Performer: IDA

Mr. James Bui   (703) 845-2133
Dr. Robert Oliver   (703) 578-2981

Resources:

	Dollars:	Staff-years:
FY 94	$275,000	1.7
FY 96	$175,000	1.1

Schedule: Start: April 1993

End: December 1997

Data Base: Satellite data includes Unmanned Space Vehicle Cost Model and data collected by IDA. Missile cost data from U.S. Army and Navy sources. Satellite and missile RDT&E and production costs segregated by subsystems. Satellite and missile technical data, including performance characteristics and nuclear-hardening specifications.

Automation: Excel spreadsheets

Publications: 1. IDA P-2857, "Estimating the Costs of Nuclear-Radiation-Hardened Military Satellites," Secret/Restricted Dated, November 1994

2. IDA P-3120, "Estimating the Costs of Nuclear-Radiation-Hardened-Military Satellites, (Unclassified Version)," April 1996

Title: Financial Databases of Defense Manufactures

Summary: The Weapon Systems Cost Analysis Division of PA&E is continually involved in both acquisition policy determination as well as the cost analysis of the effects of DoD programmatic actions on individual contractors in specific programs. While the economics profession has a well developed theory of the firm to apply to commercial markets, many of the important and unique characteristics of the defense market-place are ignored. Thus, many of the policy judgments about acquisition issues are neither grounded in adequate micro-economic theory, nor based on empirical research. Dramatic increases in defense contractor overhead costs as a general trend in the industry continue to compromise the affordability of weapon systems. Between 1980 and 1989 OD(PA&E) funded IDA collection of financial data on 12 defense contractors. The database extends through 1987 for most contractors. IDA used the data to decompose overhead in to fixed and overhead components. The effort needs to be extended to update the database. The financial databases for the original contractors will be updated and extended to include most recent data available. These data will be structured to ensure consistency with earlier IDA reports on the same contractors and will be used to update the overhead statistical models. IDA will also establish an automated database for storage and retrieval. [This task appeared in the 1995 catalog as PA&E-3]

Classification: Unclassified, Proprietary

Sponsor: Weapon Systems Cost Analysis Division
OD(PA&E)
Room 2D310, The Pentagon
Washington, DC 20301

Mr. Gary Pennett   (703) 695-7282

Performer: IDA

Mr. John Cloos   (703) 845-2506

Resources:		Dollars:
	Study Funding FY 95	$150,000
	ADP Funding FY 95	$100,000
	Study Funding FY 96	$100,000
	Study Funding FY 97	$150,000

Schedule: Start: 1994

End: 2000

Data Base: Normalized Contractor Account Pools

Publications: Numerous. Company reports and studies.

Category: II.A.1, II.A.2

Keywords: Industry, Estimating, Analysis, Aircraft, Airframe, EMD, Production, Overhead/Indirect, Manufacturing, Fixed Costs, Variable Costs, Data Collection, Survey, Economic, Analysis, Data Base

Title: Private Shipbuilder Overhead Costs

Summary: The Weapon Systems Cost Analysis Division of PA&E is continually involved in both acquisition policy determination as well as the cost analysis of the effects of DoD programmatic actions on individual contractors in specific programs. While the economics profession has a well developed theory of the firm to apply to commercial markets, many of the important and unique characteristics of the defense market-place are ignored. Thus, many of the policy judgments about acquisition issues are neither grounded in adequate micro-economic theory, nor based on empirical research. Dramatic increases in defense contractor overhead costs as a general trend in the industry continue to compromise the affordability of Naval ships, weapon systems and hull mechanical and electrical ship board components. This is a continuation of a task that studies the overhead cost structure of six private ship yards to gain a better understanding of the root cause of these upward cost trends. The financial databases for the ship yards initiated in last years study will be extended to most aspects of cost distribution and allocations in cost pools. These data will be structured to ensure consistency with earlier IDA reports on the same contractors and will be used to update the overhead statistical models. [This task appeared in the 1995 catalog as PA&E-1.]

Classification: Unclassified, Proprietary

Sponsor: Weapon Systems Cost Analysis Division
OD(PA&E)
Room 2D310, The Pentagon
Washington, DC 20301

Mr. Gary Pennett   (703) 695-7282

Performer: IDA

Mr. John Cloos   (703) 845-2506

Resources: Dollars:

FY 95	$340,000
FY 96	-0-
FY 97	$240,000

Title:	Economic Drivers of Defense Overhead Costs

Summary: The objective of this task is to identify the economic and regulatory factors that drive the overhead costs charged by defense firms. A theoretical model of overhead costs from an economic framework will be developed. The model will be used to analyze the relationship of economic factors and DoD regulations on contractor overhead costs under current business practices. The model will also assess how changes in DoD regulations impact the balance of economic forces. This project address the "Knotty Problems" paragraph in the DoD Six Year Cost Research Plan.

Classification: Unclassified/Company Proprietary

Sponsor: OD(PA&E), Room 1D311, The Pentagon

Ms. Kristine Kolesar   (202) 697-2999

Performer: IDA

Dr. Thomas Frazier   (703) 845-2132
Dr. An-Jen Tia   (703) 845-2448
Dr. Bill Rogerson   (703) 491-8484

Resources: Dollars: Staff-years:

FY 95 $250,000

Schedule: Start: April 1995

End: September 1996

Data Base: IDA's Defense Contractor Overhead Data Base, Contractor Cost Data Reports

Automation: TBD

Publications: TBD

Category: II.C

Keywords: Government, Estimating, Overhead/Indirect, Economic Analysis, Study

Title:	Resource Analysis for Test and Evaluation

Summary: Analysis of resources devoted to the Major Range and Test Facility Base to include operating cost, investment cost, and personnel resources. Analyses include cost comparisons of alternative approaches to developing test and evaluation capability and realigning workload within existing infrastructure. Evaluation will include identification of efficiencies in management, operations, and resource processing. [This task appeared in the 1995 catalog as IDA-13.]

Classification: Top Secret

Sponsor: Deputy Director
Defense Test System Engineering and Evaluation (DTSEE)
Room 3D1067, The Pentagon
Washington, DC 20301

Dr. Patricia A. Saunders   (703) 697-4818

Performer: IDA

Mr. Charles T. Ackerman   (703) 578-2714
Mr. Dennis O. Madl   (703) 578-2718

Resources: Dollars: $1,600,000

Staff-years: 10

Schedule: Start: October 1995

End: April 1997

Data Base: T&E Resources

Description: Operating Cost, Investment Projects, Real Property

Automation: Hard copy, floppies or hard disk

Publications: 1. "Cost Comparison of the Navy's Air Combat Environment Test and Evaluation Facility (ACETEF) and the Air Force's Electronic Combat Integrated Test (ECIT)," IDA Paper 2727, K. M. Olver, C. T. Ackerman, J. J. Cloos, D. B. Levine, and D. O. Madl, June 1992, Unclassified

2. "The Need for Unexploded Ordnance Remediation Technology," IDA Document 1527, C. T. Ackerman, I. Boyles, C. M. Jordan, October 1992, Unclassified

3. "Lesson Learned from the BRAC 1995 Joint Cross-Service Group for Test and Evaluation," IDA Document 1721, C. T. Ackerman, D. O. Madl, T. A. Musson, G. Tolis, December 1995, Unclassified

Category: I.B.2

Keywords: Government, Analysis, Policy, Programming, Budgeting, Infrastructure, EMD, Test and Evaluation, Operations and Support, Acquisition Strategy, Labor, Overhead/Indirect, Economic Analysis, Study, Data Base

Title: Resource Analysis for Acquisition Systems Protection

Summary: Analyze deficiencies identified and progress in implementing the DoD Acquisition Systems Protection (ASP) Program, estimate resources required to correct deficiencies, and from this information contribute revisions to the ASP Master Plan, and ASP Information Management System. [This task appeared in the 1995 catalog as IDA-14.]

Classification: Secret

Sponsor: Deputy Director, Security Program Integration
Directorate of Counterintelligence and Security Programs,
DASD(I&S)
The Pentagon, Room 3C281
Washington, DC 20301

Ms. Rene Davis-Harding   (703) 697-2242

Performer: IDA

Mr. Thomas Musson   (703) 845-2729
Ms. Christine Lange   (703) 845-2728

Resources:

	Dollars:	Staff-years:
FY 92	$250,000	1.7
FY 93	$250,000	1.7
FY 94	$160,000	1.0
FY 96	$75,000	0.5

Schedule: Start: January 1992

End: March 1997

Data Base: None

Publications: TBD

Category: II.A.2, II.C

Keywords: Government, Analysis, Weapon Systems, Life Cycle, Security, Case Study, Review, Study

Title: Recapitalizing the Forces

Summary: This task has two major subtasks: developing data bases and tools to assess future DoD recapitalization requirements during the period of the Defense Program Projection and performing case studies of selected weapon systems (i.e., F-16 Service Life and Resource Requirements) and types of weapon systems (i.e., Army Helicopters). Relative to the data bases and tools, the initial focus has been on collecting data on equipment inventories and creating a capital stock data base. The primary case study has been on the F-16 assessing service life and resource requirements needed until the Joint Strike Fighter deploys.

Classification: Secret

Sponsor: OD(PA&E) and USD(A&T)

Performer: IDA

Mr. Waynard C. Devers　　　　　(703) 845-2252

Resources:

	Dollars:	Staff-years:
FY 94	$53,000	0.4
FY 95	$200,000	1.3
FY 96	$310,000	2.0

Schedule: Start: January 1995

End: June 1997

Data Base: Description: Equipment data bases including inventory, age, service life, and operating tempo by serial number for Army, Navy, Marine Corps and Air Force aircraft, combat vehicles, and selected trucks, and capital stock data base for selected equipment

Automation: Equipment Data Base—FOXPRO Capital Stock Data Base—Excel

Publications: None

Category: I.B.1, II.B, II.C

Title: Rotary Wing Aircraft Recapitalization Analyses

Summary: Concepts for future rotary wing aircraft systems envision filling the force structure using fewer platforms types. Given this, there are many possible approaches to current and planned rotary wing platforms to accommodate the eventual transition to fewer platform types. The objective of this task is to analyze the affordability implications of various rotary wing aircraft recapitalization strategies.

Classification: Unclassified

Sponsor: Office of the Director for Force Structure
Resource and Assessment (J-8) of the Joint Staff

Lieutenant Colonel Mark Gibson, USMC   (703) 697-6070

Performer: IDA

Mr. Bruce Harmon   (703) 845-2501

Resources: Dollars: $82,916

Staff-years: 0.6

Schedule: Start: October 1995

End: September 1996

Data Base: Description: Data and model characterizing future rotary wing aircraft inventories and investment costs.

Publications: None

Category: II.A.2

Keywords: Government, Programming, Estimating, Helicopters, Acquisition Strategy, Production Rate, Cost/Production Function, Case Study

Title:	USMC Utility Rotary Wing Aircraft
Summary:	This task provides operating and support costs estimates for selected USMC utility rotary wing aircraft.
Classification:	Unclassified
Sponsor:	OD(PA&E)
Performer:	IDA
	Mr. Waynard C. Devers (703) 845-2252
Resources:	Dollars: $75,000
	Staff-years: 0.5
Schedule:	Start: November 1995
	End: September 1996
Data Base:	Description: Operating and support cost data bases including inventory, operating tempo, cost drivers and cost factors for Marine Corps utility rotary wing
	Automation: Data Base—Excel
Publications:	Report due at completion of study with data bases
Category:	I.B.1, II.A.1
Keywords:	Forces, Weapon Systems, Helicopters, Rotary Wing Aircraft, Data Collection, Data Base, Case Studies

Title:	Trends in Weapons System O&S Costs

Summary: The objective of this task is to investigate available operating and support cost data to see if past efforts to reduce O&S costs have been effective. Results will be normalized, as much as possible, for changes in weapons capability, operating tempo, and economic inflation. [This task appeared in the 1995 catalog under the name Cost Defense Force Projection as IDA-3.]

Classification: Secret

Sponsor: OUSD(A&T)(API)
Program Assessment, Acquisition
The Pentagon, Room 1E466

Dr. Royce Kneece (703) 697-1786

Performer: IDA

Mr. Timothy J. Graves (703) 845-2239

Resources:

	Dollars:	Staff-years:
FY 90	$125,000	1.0
FY 91	$125,000	1.0
FY 92	$200,000	1.3
FY 93	$250,000	2.0
FY 94	$300,000	2.4
FY 96	$100,000	0.8

Schedule: Start: July 1990

End: September 1995

Data Base: VAMOSC data, Service OPTEMPO data

Description: FYDP type data for all DoD programs to include Defense Mission Categories, Program Element, Procurement Annex Line Item

Publications: Pending, Unclassified

Category: II.A.1, II.A.2 and II.B

Keywords: Government, Programming, Forces, Acquisition Strategy, Operations and Support, Mathematical Modeling, Computer Model

Title:	Evaluation of Uniformed Services Treatment Facilities
Summary:	The primary objective of this task is a cost-effectiveness analysis of the Managed Care Plan (MCP) available at Uniformed Services Treatment Facilities (USTFs). The DoD has a contract with each USTF to provide health care at a capitated rate based on the sex and age group of the beneficiaries served. The cost of each plan is being compared to the alternative that the MCP is terminated and the USTFs become standard CHAMPUS providers. [This task appeared in the 1995 catalog as IDA-18.]
Classification:	Unclassified
Sponsor:	OASD (HA/HSF) The Pentagon, Room 1B657 Washington, DC 20301
	Mr. Gunther J. Zimmerman (703) 695-3331
Performer:	IDA
	Dr. Philip M. Lurie (703) 845-2118
Resources:	Dollars: $400,000
	Staff-years: 2.5
Schedule:	Start: February 1995
	End: September 1996
Data Base:	None
Publications:	"Summary of IDA's Evaluation of the Uniformed Services Family Health Plan," IDA Document D-1814, January 1996
Category:	II.A.1, II.A.2, and II.B
Keywords:	Government, Analysis, Policy, Manpower/Personnel, Test and Evaluation, Variable Costs, Data Collection, Survey, Mathematical Modeling, Economic Analysis, Data Base, Study

Title: Estimation of Medical-Specific Inflation Indices

Summary: This task is investigating the sources of inflation in medical care provided directly at military hospitals. Particular attention is being given to the volume and intensity of medical care, as well as the influence of technology on the cost of care.

Classification: Unclassified

Sponsor: Director, Program Analysis and Evaluation

Mr. Paul F. Dickens III   (703) 697-2999

Performer: IDA

Dr. Matthew S. Goldberg   (703) 845-2099

Resources:

	Dollars:	Staff-years:
FY 95	$250,000	1.5

Schedule: Start: January 1995

End: September 1996

Data Base: N/A

Publications: Final report due at end of project.

Category: II.C

Keywords: Government, Programming, Budgeting, Infrastructure, Operations and Support, Advanced Technology, Economic Analysis, Cost/Production Function, Statistics/Regression, Study

Title:	Automation of the Cost Oriented Resource Estimating Model

Summary: The Cost Oriented Resource Estimating Model (CORE) is an Air Force operating and support cost model outlined in the Air Force Instruction (AFI) 65-503. The purpose of the model is to provide MAJCOMs with a cost-estimating tool for the development of annual aircraft squadron O&S estimates. The purpose of this research effort is to explore the development of an automated CORE model user interface and cost factor data base.

Classification: Unclassified

Sponsor: IDA Central Research Program

Performer: IDA

Mr. Alec Salerno   (703) 845-2243

Resources: Dollars: $10,000

Staff-years: 0.1

Schedule: Start: April 1996

End: September 1996

Data Base: Operating and Support cost factors for selected Air Force force structure.

Publications: TBD

Category: II.A.2

Keywords: Government, Estimating, Aircraft, Operations and Support, Mathematical Modeling, Method

Title: Preplanned Product Improvements and Engineering Change Proposals for Consolidated Automated Support System (CASS)

Summary: Provides assessment of costs and benefits of preplanned product improvement options and engineering change proposals to CASS to meet Navy, Marine Corps, and other service requirements. [This task appeared in the 1995 catalog as IDA-15.]

Classification: Unclassified

Sponsor: OSD(ES)
The Pentagon, Room 2B322
Washington, DC 20301

Mr. Martin Meth   (703) 697-6833

Performer: IDA

Dr. Daniel B. Levine   (703) 845-2562
Dr. George Hopper   (703) 845-6751
Mr. Waynard C. Devers   (703) 845-2252

Resources: Dollars: $550,000

Staff-years: 3.6

Schedule: Start: March 1994

End: TBD

Data Base: None

Publications: "The Capability of the Consolidated Automated Support System (CASS) to Meet Expanded Test Requirements," IDA Paper P-3131, April 1996

Category: I.B.1

Keywords: Government, Analysis, Electronics/Avionics, Operations and Support, Automation, Economic Analysis, Study

Title: The Costs of Collocating Wargaming and Simulation Centers

Summary: The purpose of this task is to estimate the savings that might result from collocating two joint training and simulation centers in the Norfolk, VA. area: the Joint Warfighting Center in Hampton, and the Joint Training, Analysis and Simulation Center in Suffolk. [This task appeared in the 1995 catalog as IDA-26.]

Classification: Unclassified

Sponsor: OSD(P&R), Room 3B930, The Pentagon

Mr. John J. Walsh   (703) 695-1760

Performer: IDA

Dr. Daniel B. Levine   (703) 845-2562

Resources: Dollars: $250,000

Staff-years: 1.6

Schedule: Start: April 1995

End: April 1996

Data Base: Facilities, equipment, personnel, cost resources employed by the two joint training centers

Publications: "The Potential Cost Savings From Collocating the Joint Warfighting Center and the Joint Training, Analysis and Simulation Center," IDA Paper P-3162, forthcoming

Category: II.C

Keywords: Government, Estimating, Facilities, Life Cycle, Economic Analysis, Study

Title: Software Environments

Summary: The first objective of this task is to provide technical advice on open architecture issues. The second objective is to develop practical ways to model and measure the impact of STARS environments, tools, and processes on software productivity and quality. [This task appeared in the 1995 catalog as IDA-9.]

Classification: Unclassified

Sponsor: DARPA
801 N. Randolph Street
Suite 400
Arlington, VA 22209

Ms. Linda Brown · (703) 351-5300

Performer: IDA

Dr. Thomas P. Frazier · (703) 845-2132
Dr. John Bailey · (703) 385-8300
Mr. Bruce N. Angier · (703) 845-2513

Resources:

	Dollars:	Staff-years:
FY 91	$370,000	2.5
FY 92	$200,000	1.75
FY 93	$200,000	1.5
FY 94	$145,000	1.25
FY 95	$98,000	1.00

Schedule: Start: May 1990

End: June 1996

Data Base: None

Publications: "A User's Guide for the Software Technology Economic Impact Model," IDA Document D-971, T. P. Frazier, B. Boehm, B. N. Angier, E. K. Bailey, P. M. Lurie, and K. L. Wilson, October 1991, Unclassified

"The Economic Impact of STARS-Supported Technologies," IDA Document D-1093, T. P. Frazier, E. K. Bailey, B. N. Angier, and K. L. Wilson, January 1992, Unclassified

Category: II.A.2

Keywords: Government, Analysis, EMD, Automation, Mathematical Modeling, Study, Computer Model

Title: Economics of Software Reuse Repositories

Summary: The objective of this project is to investigate the issues involved in constructing a fee-for-service charging scheme that could be employed by a software reuse repository. The product of this research will be a report that identifies a pricing scheme that will take into account economic factors that encourage the practice of reusing software and factors that encourage contributors to place reusable software components into the repository. [This task appeared in the 1995 catalog as IDA-10.]

Classification: Unclassified

Sponsor: Director of Defense Information
Crystal Square #2, Suite 900
Arlington, VA

Ms. Linda Brown   (703) 746-7928

Performer: IDA

Dr. Thomas Frazier   (703) 845-2132
Dr. Elizabeth Bailey   (703) 385-8300
Mr. Bruce Angier   (703) 845-2513

Resources: Dollars: $70,000

Staff-years: 0.5

Schedule: Start: January 1993

End: February 1995

Data Base: N/A

Publications: "Economic Foundations for Pricing Software Reuse Repositories," IDA Paper P-2975, T. P. Frazier, E. K. Bailey, and B. N. Angier, September 1994.

Category: II.D

Keywords: Government, Policy, Economic Analysis, Study

Title:	Estimating the ROI for Software System Engineering

Summary: This task seeks to estimate the economic benefits to the DoD from investments in software technologies. [This task appeared in the 1995 catalog as IDA-11.]

Classification: Unclassified

Sponsor: Defense Information Systems Agency
Software Systems Engineering Directorate
Falls Church, VA 22042

Dr. Alan Smith   (703) 285-6589

Performer: IDA

Dr. Thomas Frazier   (703) 845-2132

Resources: Dollars: $67,230

Staff-years: 0.5

Schedule: Start: July 1994

End: September 1996

Data Base: N/A

Publications: TBD

Category: I.A.1, II.A.2

Keywords: Government, Estimating, Infrastructure, Production, Engineering, Mathematical Modeling, Study

Title: Migration (Tree) Diagrams and Enterprise Integration Process
Documentation Support

Summary: This task analyzes the migration process used for selecting
migration candidates. From this analysis, a knowledge base will be
prepared for use with the prototype Process Management Tool.
This development of the Enterprise Integration knowledge base will
be used to educate and assist functional managers in developing
their migration strategies for legacy systems. In addition,
coordinated development efforts with the Defense Logistics
Agency and other contractors will be used to develop a separate
knowledge base to address Business Process Reengineering. [This
task appeared in the 1995 catalog as IDA-5.]

Classification: Unclassified

Sponsor: Defense Information Systems Agency (DISA)
Directorate of Enterprise Integration
5201 Leesburg Pike, Suite 1501
Falls Church, VA 22041

Mr. Martin Gross   (703) 681-4740

Performer: IDA

Mr. Paul Goree   (703) 845-2238

Resources: Dollars: Staff-years:

FY 95   200,000   1.3

Schedule: Start: March 1995

End: May 1996

Data Base: An online access database for each knowledge base, e.g. EI, BBR

Description: The DIST database will be accessed to help with the
decision process.

Automation: PC using Microsoft Access and Visual Basic

Publications: User Guide, Author Guide, EI Knowledge Base

Category: II.A.2, II.C

Keywords: Government, Analysis, Infrastructure, Life Cycle, Automation Integration, Case Study, Method, Computer Model

Title: Business Process Redesign

Summary: The objective of this project is to develop an integrated tool set designed to incorporate business redesign functions. The tool set will be composed of process modeling software, activity-based accounting models, and analytical models such as the Functional Economic Analysis Model. A prototype integrated model was demonstrated in the spring of 1994. [This task appeared in the 1995 catalog as IDA-12.]

Classification: Unclassified

Sponsor: Director of Defense Information
Crystal Square #2, Suite 900
Arlington, VA

Mr. Mike Yeomans   (703) 746-7932

Performer: IDA

Dr. Thomas Frazier   (703) 845-2132
Mr. Alex Salerno   (703) 845-2243
Mr. Charles Weber   (703) 845-6784

Resources:

	Dollars:	Staff-years:
FY 93	$150,000	1.0
FY 94	$300,000	2.0

Schedule: Start: January 1993

End: Continuing

Data Base: N/A

Publications: TBD

Category: II.A.2

Keywords: Government, Estimating, Infrastructure, Operations and Support, Automation, WBS, Mathematical Modeling, Method, Computer Model

Title: Reserve Component Volunteerism

Summary: This work is designed to develop an understanding of the need to have members of the reserve components available to pursue combat or non-combat scenarios in circumstances that are unlikely to involve involuntary activation of reserve personnel. It will evaluate the extent to which it is necessary to have pre-identified individuals or units that are known to be available on a voluntary basis in these circumstances. It will also develop policies to support such a program of reserve volunteerism if one is determined to be needed. The potential cost of these policies will be examined. [This task appeared in the 1995 catalog as IDA-24.]

Classification: Unclassified

Sponsor: Assistant Secretary of Defense (Reserve Affairs)
The Pentagon, Room 2E515
Washington, DC 20301

Colonel Michael Angelo   (703) 697-0739

Performer: IDA

Mr. Stanley A. Horowitz   (703) 845-2469

Resources: Dollars: $250,000

Staff-years: 2.0

Schedule: Start: April 1994

End: November 1995

Data Base: Description: Categorization of requirements for reserve volunteers by type of contingency, type of unit, and military specialty personnel.

Automation: Microcomputer floppy disks

Publications: "Reserve Volunteerism," IDA Paper 3153, forthcoming

Category: II.C

Keywords: Government, Analysis, Policy, Manpower/Personnel, Labor, Readiness, Data Collection, Data Base, Study

Title: Environmental Costing Resources in the Department of Defense

Summary: This project continues to develop a catalog of environmental cost groups within the DoD and the Services and a summary of DoD environmental costing capabilities. An overview of the effect of environmental regulations on life cycle cost analysis is also examined. [This task appeared in the 1995 catalog as IDA-22.]

Classification: Unclassified

Sponsor: IDA Central Research Project

Performer: IDA

Ms. Kathryn L. Wilson

Resources: Dollars: $25,000

Staff-years: 0.2

Schedule: Start: October 1994

End: September 1996

Data Base: 1. Environmental Resources in the Department of Defense

2. Environmental Life-Cycle Costs

Publications: TBD

Category: I.C

Keywords: Government, Reviewing/Monitoring, Life Cycle, Environment, Survey, Data Base, Review

Title: Cost Analysis Education

Summary: IDA collaborated with George Mason University in the development and conduct of a graduate level course in cost analysis during the past four years. Current plans are to continue to offer the course annually. Course content focused on the daily problems confronted by defense cost analysts and approaches to solve them. Government employees are invited to attend lectures free of charge. This project supports the development of lecture materials by IDA cost analysts. [This task appeared in the 1995 catalog as IDA-19.]

Classification: Unclassified

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13. ABSTRACT (Maximum 200 words)

This document contains a catalog of cost research projects discussed at the IDA Cost Research Symposium held on 23 May 1996. Participants included representatives of offices and organizations that sponsor and conduct the research. The purpose of this annual symposium is to facilitate the exchange of research findings and other information in order to avoid wasteful duplication of effort and enhance each organization's ability to conduct research planning for the future. Each project summary included in this document presents the project title, a descriptive summary, classification, sponsor, performer, researchers, schedule, data bases, publications, and keywords. The research directors of the offices and organizations that participated report that catalogs associated with prior symposia (1989 through 1995) have been useful in facilitating the exchange of data, data sources, findings, and reports, thereby contributing to improved efficiency in the cost analysis function within the Department of Defense.

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